

# A TABLE of KINGS.

## Anno, 1678.

<i>The Kings Names.</i>	<i>Their Birth</i>	<i>Began his Reign.</i>	<i>Reigned Ye. Mo D.</i>	<i>Since their Reign began</i>
W. Con.	1023	1066 Octo. 14	20 11 22	611 Octo. 14
W. Rufus	1057	1087 Sep. 9	12 11 19	590 Sept. 6
Henry 1	1068	1100 Aug. 1	35 04 11	577 Aug. 1
Stephen	1205	1135 Dec. 2	18 11 19	542 Dec. 2
Henry 2	1131	1154 Octo. 25	34 09 02	517 Octo. 25
Richard 1	1155	1189 July 6	09 09 22	488 July 6
K. John	1166	1199 Apr. 6	17 07 00	478 Apr. 6
Henry 3	1207	1216 Octo. 19	56 01 00	461 Octo. 19
Edward 1	1239	1272 Nov. 16	34 08 09	405 Nov. 16
Edward 2	1233	1307 July 6	19 07 06	370 July 7
Edward 3	1312	1326 Jan. 25	50 09 07	351 Jan. 25
Richard 2	1366	1372 June 21	22 03 16	301 June 21
Henry 4	1367	1399 Sept. 29	13 06 05	278 Sept. 29
Henry 5	1384	1412 Mar. 20	09 05 24	265 Mar. 20
Henry 6	1421	1422 Aug. 31	38 06 18	255 Aug. 31
Edward 4	1442	1460 Mar. 4	12 01 08	217 Mar. 4
Edward 5	1474	1483 Apr. 9	00 02 18	194 Apr. 9
Richard 3	1410	1483 June 22	02 02 05	194 July 22
Henry 7	1455	1485 Aug. 22	23 18 19	192 Aug. 22
Henry 8	1491	1509 Apr. 22	37 10 02	168 Apr. 22
Edward 6	1537	1546 Jan. 28	06 05 19	131 Jan. 28
Q. Mary.	1515	1553 July 6	05 04 22	124 July 6
Q. Eliza.	1533	1558 Nov. 17	44 04 15	119 Nov. 17
K. James	1566	1602 Mar. 24	22 00 03	075 Mar. 24
Charles 1	1600	1625 Mar 27	24 10 06	052 Jan. 30
Charles 2	1630	1648 Jan. 30	Whom G. grant long to R.	

F I N I S.

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F I N I S.



*Arithmetick Abbreviated. 3*

TEACHING THE  
ART OF TENNES OR  
Decimals to worke all Questions  
in Fractions as whole Numbers,  
without Reduction: An easier and  
Plainer way than the vulgar.

Shewing the use also of *Napi-*  
*ers* Bones, by which Multiplication and  
Division is performed without charging  
the Memory at all to those that will  
make use of them.

As also the extracting of the Square and  
and Cube Roots, with divers Ap-  
plications thereof.



Printed at *London* for *James Boler*, and *William*  
*Luggard*, and are to be sold at the *Marigold* in  
*Pauls Church-yard*. 1634.

2869:84



To the Right Honorable,  
Sir HUMPHREY DAVENPORT,  
Knight, Lord Chiefe Baron,  
Grace and Peace.

*Right Honourable,*

**Y**our Noble inclination  
on unto the Liberall  
Sciences well known,  
have caused me to crave  
shelter under your Lordships pro-  
tection against those censurers  
which all that beare any part on  
the Theater are subiect unto. And  
although divers (learned in this

A 2

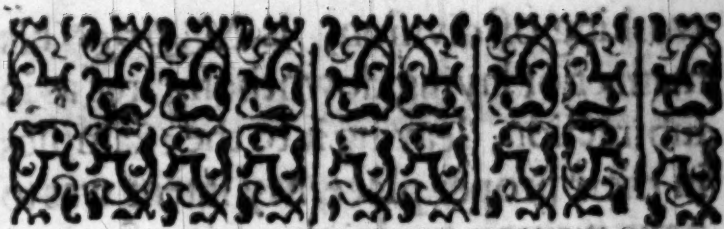
Art,)

## *The Epistle Dedicatory.*

Art,) have already discovered much treasure in this bottomelesse Mine, yet give mee leave with the poore widdow to offer my Mite; which if it shall please your Lordship to cast your eyes upon; accepting of these my labours, I doubt not, but that the variety will afford content. Thus craving pardon in this my boldnesse, submitting my selfe to your Lordships grave Iudgement; I humbly rest devoted to your Lordships service,

*William Barton.*





*To the Reader.*

**C**ourteous Reader, Although  
wise men by Authority may  
befoole those whom they are  
able to better by their wisdom, yet I  
have laid my selfe open unto their cen-  
sures, by whom it will fare with me as  
with Musicians ; for amongst those  
sects, no man gaineth praise but hee  
which playeth excellent well, or very  
ill ; the meane hath no commendations  
at all ; one of these I am sure of. All  
that I desire (friendly Reader) is to  
give me leave to bring forth my Pro-  
duct ; as a shrub growing amongst Ce-  
dars must be content to be over-look'd.  
The method that I have observed in  
working

*To the Reader.*

working of division, is Mr. *Brigs* his manner of laying down the figures as in subtraction, leaving it to the examples in their proper place. My intent was to have written as plainly as any formerly, wherein if I have failed, it is not the first time I have bin my owne Parasite; and to please all, I intended not, being sure I shal please those that desire it. Thus not doubting but that my good will, shall be friendly taken, I commit you to the protection of the Almighty.

*Vale.*

**WILLIAM BARTON.**

**The**



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*Numeration.*





# ARITHMETICKE

## ABBREVIATED.

### *Numeration:*



**N**umeration is the first part of Arithmetick, and serveth to expresse the value of any number given, which numbers consist of Nine figures and a cypher. To name them, you must beginne at the right hand, each figure on the left hand increasing his figure on the right hand, tenne times. The order is as followeth.

**B**

**The**

# Numeration.

eighteenth	2	3	:	4	5	6	:	7	8	9	:	5	5	5	:	4	4	4	:	3	3	3
seventeenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
sixteenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
fifteenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
fourteenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
thirteenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
twelfth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
eleventh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
tenth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ninth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
eighth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
seventh	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
sixth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
fifth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
fourth	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
third	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
second	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
first	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

The

Addition

## Addition

Addition serveth to bring divers summes into one summe. Example.

As from the Creation of the world unto Noahs flood, 1656 yeares, from Noahs flood to the giving of the Law, 875 yeares, from the Law to the Birth of our Lord and Saviour Iesus Christ 1508 yeares, from the birth of Christ unto this present, 1634 yeares; the question is, how many yeares from the Creation unto this present yeare?

A generall rule in placing the figures in Addition & Subtraction, place unites under unites, tens under tennes, hundreds under hundreds, &c. and so all others of one denomination; as in the example.

thousands	hundreds	tennes	unites
1	6	5	6
•	8	7	5
1	5	0	8
1	6	3	4

Total 5 6 7 3  
 $\begin{array}{r} 5673 \\ 27 \\ \hline 5900 \end{array}$

First worke; beginne with the units, and adde them together, makes 23. place the  
B 2
odde

$$\begin{array}{r} 1634 \\ 27 \\ \hline 1661 \end{array}$$

*Addition.*

odde 3, under units, and carry 2. in mind.

Secondly, adde the tens together, with 2 in mind, makes seventeene ; place the odde 7 under tennes, and carry 1 in minde.

Thirdly, adde the hundreds together, with one in minde, makes 26. place the odde 6 under hundreds, and carry 2 in minde.

Fourthly, adde the thousands together, with 2 in mind, makes 5, place 5 under thousands, and the worke ended, makes 5673 yeares, as in the example.

Subtraction serveth to take a lesse summe out of a greater. Example.

*Anno Domini*, 1460. Printing was invented : I demand how many yeares since the Invention Subtract 1460 out of this present yeare, 1634. gives you 174 yeares.



# Subtraction.

First work: take 0 out of 4, rests 4. place 4 under unites.

Secondly, tennes: take 6 out of three you cannot, wherefore you must take 10 to 3, which makes 13. take 6 out of 13, rests 7. place 7 under tennes, and carry 1 in mind.

thousands	hundreds	tennes	unites
1	6	3	4
1	4	6	0
<hr/>			
	1	7	4
1	6	3	4

Thirdly, hundreds: 1 I borrowed, makes 4 to be 5. take 5 out of 6, rests 1. place 1 under hundreds.

Fourthly, thousands: take 1 out of 1, rests 0, which I place not downe being no figure, and the last worke.

The prooffe is by adding the remainer, and the subtracted summe together, and if it bring forth the upper summe, it is true, else not, as in the example,

B 3

Addition

First worke ; beginne with pence, and adde them together, makes 3 shillings, 9 pence : place the odde 9 pence under pence, and carry 3 shillings to shillings.

Secondly, adde the shillings together, with 3 shillings in mind, makes 2 pound, 15 shillings, place the odde 15 shillings under shillings, and carry 2 pounds to pounds.

Thirdly, adde the unites together, with 2 in mind, makes 39. place the odde 9 under unites, and carry 3 in mind.

Fourthly adde the tennes together, with 3 in mind, makes 49. place the odde 9 under tennes, and carry 4 in mind.

Fifthly, adde the hundreds together, with 4 in mind, makes 11. place 11 under hundreds, as in the example, makes 119, pound, 15 shillings, 9 pence, the totall summe.

# Addition.

7

September 29. (anno) 1633. Deb-  
tors charged payable, March 25. (anno)  
1634.

	P.	£.	d.	
A. B.	225	03	06	
C. D.	1, 0	06	08	3
E. F.	67	08	03	
To < G. H.	58	11	10	4
I. K.	342	01	06	
L. M.	186	02	04	0
N. O.	96	04	02	
P. Q.	63	17	06	

The totall summe 1199 | 15 | 09 |

The proote is by subtracting the upper-  
most summe, pointed at by the finger, out  
of the totall : then againe adde all the num-  
bers, the uppermost excepted, if it bring  
forth the remainder of the subtraction, it is  
true. Example,

Remainder subtracted	964	12	03
Last Addition	964	12	03

## Subtraction;

First worke pence; take 3 out of 9, rests 6, place 6 under pence.

Secondly shillings; take 12 out of 15, rests 3. place 3 under shillings.

Thirdly unites; take 4 out of 9, rests 5, place 5 under unites.

Fourthly tennes; take 6 out of 9, rests 3, place 3 under tennes.

Fifthly hundreds; take 9 out of 1, you cannot, wherefore take 10 to 1, makes 11. take 9 out of 11, rests 2, place 2 under hundreds, for the last worke.

So that A. B. rests Debtor 235 pound, 3 shillings, 6 pence, as by the worke it doth appeare.

March



# Subtraction.

9

March 25. (anno) 1634. Debtors  
discharged.

	p.	s.	d.	
Debt	1199	15	09	
Received of				
C. D.	150	06	08	3
E. F.	67	08	03	
G. H.	58	11	10	4
I. K.	342	01	06	
L. M.	186	02	04	0
N. O.	96	04	02	
P. Q.	63	17	06	
Received	964	12	03	
A. B. rest	235	03	06	
Prooffe	1199	15	09	

The prooffe is by adding the totall received, and the remainder together, and if it bring forth the Debt, it is true, else not, as in the example.

Multiplica

## Pythagoras Table

1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25
6	12	18	24	30
7	14	21	28	35
8	16	24	32	40
9	18	27	36	45

Multiplication serveth to performe that at once, which Addition doth at many times ; and to multiply readily, this Table is to be perfectly learned by heart : it is made by Arithmetical Progression, which is an increasing of your first number 9 times. The use of this Table is as if you would know what 20 times 12 makes: to adde 20, 12 times were tedious, wherefore place the figures as in Addition, each denomination under each, as in the example. Now to know how many pence are in 20 shillings, multiply 20 by 12, the number of pence in one shilling, and the product wil give you 240 pence in one pound:

In

# of Multiplication.

II

	6	7	8	9
2	12   2	14   2	16   2	18   2
3	18   3	21   3	24   3	27   3
4	24   4	28   4	32   4	36   4
5	30   5	35   5	40   5	45   5
6	36   6	42   6	48   6	54   6
7	42   7	49   7	56   7	63   7
8	48   8	56   8	64   8	72   8
9	54   9	63   9	72   9	81   9

In multiplication, note that the uppermost number is alwayes the multiplicand, and the lower the multiplier: the performance whereof you must multiply every figure in the upper number, by every severall figure in the lower, as the lines directs you.

First worke, beginne with 2 the unite of the lower number, the multiplier, and say, 2 times nought is nought, place 0 under .. Againe, 2 times 1 is 2, place 2 under 1. as in the example.

$$\begin{array}{r}
 20 \\
 \times 12 \\
 \hline
 40
 \end{array}$$

Second.

Secondly tennes, say 1 time 0 is 0. place 0 vnder 4. Againe, 1 time 2 is 2, place 2 before 0 in the next place, as in the example.

$$\begin{array}{r}
 20 \\
 \times 2 \\
 \hline
 40
 \end{array}$$

Thirdly, draw a line and adde them together as the line directs you, makes 240 the Product.

Multiplicand 20  
Multiplier 12

$$\begin{array}{r}
 20 \\
 \times 12 \\
 \hline
 40 \\
 200 \\
 \hline
 240
 \end{array}$$

Againe, to know how many farthings are in 1 pound: as before, multiply 20 by 48, the number of farthings in one shilling, and the product will give you 960, the number of farthings in one pound. Example,

First worke, note that when you have a cypher to multiply by, as in this example, that you place cyphers to keepe the places instead of figures.

$$\begin{array}{r}
 48 \\
 \times 20 \\
 \hline
 960
 \end{array}$$

Second-



# Multiplication.

13

Secondly, say 2 times 8 is 16, place the odde 6 under 2, and carry 1 in minde. Again, 2 times 4 is 8, and 1 in mind makes 9. place 9 in the next place: as in the example.

$$\begin{array}{r} 48 \\ \times 20 \\ \hline 960 \end{array}$$

Thirdly, draw a line, and adde them together, gives you 960 the product, as in the example.

Multiplicand 48  
Multiplier 20

$$\begin{array}{r} 48 \\ \times 20 \\ \hline 960 \end{array}$$

Product 960

First worke units, say 7 times 9 is 63. place 3 under 7, and carry 6 in mind: again, 7 times 8 is 56, and

$$\begin{array}{r} 67089 \\ \times 3507 \\ \hline \end{array}$$

6 in minde, makes 62. place the odde 2 under 0, and carry 6 in minde: again, 7 times 0 is 0, and 6 in mind, makes 6. place 6 under 5. Again, 7 times 7, is 49. place 9 under 3, and carry 4 in mind: Again, 7 times 6 is 42, and 4 makes 46. place

$$\begin{array}{r} 67089 \\ \times 3507 \\ \hline 469623 \end{array}$$

# Multiplication.

place 46 before 9. as in Example.

Secondly, tennes,  
which being a cy-  
pher, place cyphers  
as in the example to  
keepe their places.

67089  
3507

469623  
00000

Thirdly, hundreds :

say, 5 times 9 is 45,  
place 5 under hun-  
dreds, and carry 4

in mind: Againe, 5  
times 8 is 40, and  
4, is 44. place 4 in  
the next place, and

carry 4 in mind: Againe, 5 times 0 is 0,  
and 4 in mind is 4: place 4 in the next  
place. Againe, 5 times 7 is 35. place 5  
in the next place, and carry 3 in minde.  
Againe, 5 times 6 is 30, and 3 is 33:  
place 33 before 5, on the left hand, as in  
the example.

67089  
3507

469623  
000000  
335445

Fourthly,

# Multiplication.

15

67.89

Fourthly, thou-  
sands: say 3 times

67089  
3507

0 is 27, place 7

under 4, and car-

ry 2 in mind. A-

gain, 3 times 8

is 24, and 2 in

mind makes 26.

place 6 in the next place, and carry 2 in

mind. Again, 3 times 0 is 0, and 2 in

mind, is 2: place 2 in the next place.

Again, 3 times 7 is 21, place 1 in the

next place, and carry 2 in mind. Again,

3 times 6 is 18, and 2 in mind, is 20.

place 20 in the next place, on the left hand

as in the example.

Lastly, draw a

line & add them

together as the

lines direct, gives

you the product,

as in the exam-

ple.

Multiplicand 67089  
Multiplier 3507

			4	6	9	6	2	3
			0	0	0	0	0	0
		3	3	5	4	4	5	
2	0	1	2	6	7			

Product 235.281.123

Ano-

# Multiplication.

Another way of Multiplication, wherein the product is given at once, without the severall workings, or writing any figure beside the product.

First worke, multiply as the lines direct you; say, 5 times 2 is 10, place 0 under units, and carry 1 in mind.

$$\begin{array}{r} 7432 \\ \times 5 \\ \hline \end{array}$$

Secondly, say 5 times 3 is 15, and 4 times 2 is 8, which added together, with 1 in mind makes 24, place 4 in the next place on the left hand, and carry 2 in mind.

$$\begin{array}{r} 7432 \\ \times 5 \\ \hline 40 \end{array}$$

Thirdly, say 5 times 4 is 20, and 4 times 3 is 12, which added together with 2 in mind makes 24. place the odd 4 in

$$\begin{array}{r} 7432 \\ \times 5 \\ \hline 440 \end{array}$$

the



# Multiplication.

817

the next place, and carry 3 in minde.

Fourthly, say 5 times 7 is 35, and 4 times 4 is 16. which added together, with 3 in mind, makes 4 place 4 in the next place, and carry 5 in minde.

$$\begin{array}{r} 7432 \\ \times 45 \\ \hline 4440 \end{array}$$

Lastly, say 4 times 7 is 28, and 5 in minde makes 33 place 33 in the next place, and the

Multiplicand

$$7452$$

Multiplier

$$45$$

Product

$$334440$$

work ended, gives you 334440 the product, as in the example.

First work, observe the lines, and say, 2 times 4 is 8. place 8 under unites, as in the example.

$$\begin{array}{r} 524 \\ \times 452 \\ \hline 8 \end{array}$$

C

Secondly

## Multiplication

Secondly, say 2 times 2 is 4, and 3 times 4 is 12, which added together, makes 16, place 6 under tens, and carry 1 in mind.

$$\begin{array}{r} 24 \\ \times 43 \\ \hline 72 \\ 80 \\ \hline 1032 \end{array}$$

Thirdly, say 2 times 5 is 10, and 3 times 2 is 6, and 4 times 4 is 16; which added, with 1 in minde, makes 23, place 3 under hundreds, and carry 3 in minde.

$$\begin{array}{r} 24 \\ \times 43 \\ \hline 72 \\ 80 \\ \hline 1032 \end{array}$$

Fourthly, say 3 times 5 is 15, and 4 times 2 is 8, which added with 3 in mind, makes 26, place 6 before 3, and carry 2 in minde.

$$\begin{array}{r} 24 \\ \times 43 \\ \hline 72 \\ 80 \\ \hline 1032 \end{array}$$

Lastly, say 4 times 5 is 20, and 2 in minde makes 22, place 22 in the next place, for the

$$\begin{array}{r} 24 \\ \times 43 \\ \hline 72 \\ 80 \\ \hline 1032 \end{array}$$

last worke, it gives you 226368, the Product, as in the example.

# Napeirs Bones!

1	2	3	4	9
$\frac{1}{2}$	$\frac{2}{4}$	$\frac{3}{6}$	$\frac{4}{8}$	$\frac{1}{8}$
$\frac{3}{4}$	$\frac{6}{8}$	$\frac{9}{12}$	$\frac{1}{2}$	$\frac{2}{7}$
$\frac{4}{8}$	$\frac{8}{16}$	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{3}{6}$
$\frac{5}{10}$	$\frac{1}{0}$	$\frac{1}{3}$	$\frac{2}{0}$	$\frac{4}{5}$
$\frac{6}{12}$	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{2}{4}$	$\frac{5}{4}$
$\frac{7}{14}$	$\frac{1}{4}$	$\frac{2}{1}$	$\frac{2}{8}$	$\frac{6}{3}$
$\frac{8}{16}$	$\frac{1}{6}$	$\frac{2}{4}$	$\frac{3}{2}$	$\frac{7}{2}$
$\frac{9}{18}$	$\frac{1}{8}$	$\frac{2}{7}$	$\frac{3}{6}$	$\frac{8}{4}$

## Napeirs Bones.

Napeirs bones, as you may see, is nothing else but Pythagoras Table with divided lines, by which meanes Multiplication and Division is performed by Addition, and Subtraction onely, without charging the memory. They are to be cut out severally, and may be made in Paste-board, marked on both sides: 5 containeth the whole table of Multiplication, and if you make them

# Napeirs Bones

0	5	6	7	8
$\frac{0}{0}$	$\frac{1}{0}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{6}$
$\frac{0}{0}$	$\frac{1}{5}$	$\frac{1}{8}$	$\frac{2}{1}$	$\frac{2}{4}$
$\frac{0}{0}$	$\frac{2}{0}$	$\frac{2}{4}$	$\frac{2}{8}$	$\frac{3}{2}$
$\frac{0}{0}$	$\frac{2}{5}$	$\frac{3}{0}$	$\frac{3}{5}$	$\frac{4}{0}$
$\frac{0}{0}$	$\frac{3}{0}$	$\frac{3}{6}$	$\frac{4}{2}$	$\frac{4}{8}$
$\frac{0}{0}$	$\frac{3}{5}$	$\frac{4}{2}$	$\frac{4}{9}$	$\frac{5}{6}$
$\frac{0}{0}$	$\frac{4}{0}$	$\frac{4}{8}$	$\frac{5}{6}$	$\frac{6}{4}$
$\frac{0}{0}$	$\frac{4}{5}$	$\frac{5}{4}$	$\frac{6}{3}$	$\frac{7}{2}$

in paste-boord, you cannot have lesse than 15 ; that is, 3 set : you may have them made in Brasse by Mr. *Elias Allen*, over against St. Clements Church, without Temple Barre, and by divers other Instrument-makers. For the speedy finding them out, note, that the first place on both sides makes 9. As if you observe, under 9 is 0, under 4 is 5, under 3 is 6, under 2 is 7, and under 1 is 8.

First,



## Multiplication

2

First, the order to read the Bones, is to place 2 or 3 of them together, as in the example; and then begin at the right hand thereof, and note as in the third place in the halfe square on the right hand, pointed at by the finger, there is 4, which is a place by himselfe, as you may see in the added number opposite, expressing the Bones: Then in the next diamond square on the left hand, is 2 and 8, which numbers in every square must be alwayes added together, makes 10. Place 0 in the next place, and carry 1 in minde. Then in the next square is 1 and 7, which added together with 1 in mind, makes 9. Then 2 in the last halfe square on the left hand is a place by himselfe; so that 3 times, 968, makes 2904. and so of the rest.

**C** 3 **The**

the first, as in the example following.

Notes

## The Bones.

The Bones.

9	6	8	1	1	9	6	8					
1	8	2	1	6	2	1	9	3	6			
2	7	1	8	2	4	3	2	9	0	4		
3	6	2	4	3	2	4	3	8	7	2		
4	5	3	0	4	0	5	times	5	4	8	4	0
5	4	3	6	4	8	6	6	5	8	0	8	
6	3	4	2	5	6	7	7	6	7	7	6	
7	2	4	8	6	4	8	8	7	7	4	4	
8	1	5	4	7	2	9	9	8	7	1	2	

the Bones added.

The use of the Bones in multiplication serveth, as if you were to multiply 968 by 579: ever place the Bones to the upper number, or multiplicand; and the lower figures, the multiplier, points you to the place in the Bones, where you shall find the upper number so many times multiplied, as you have figures in the multiplier; observe the lines, as in the example following.

Note,

# Multiplication by the Bones. 23

9	6	8	1	Multiplicand	9	6	8
1	8	4	2	4	6		
2	7	1	8	2	4		
3	6	2	4	3	2		
4	5	3	0	4	0		
5	4	3	6	4	8		
6	3	4	2	5	6		
7	2	4	8	6	4		
8	1	5	4	7	2		
			9				

1 Multiplicand 9 6 8

2 Multiplier 8 7 9

3

4 8 7 1 2

5 6 7 7 6

6 4 8 4 0

7 6 0 4 7 2

8 Product

9

Note, that in multiplying the vulgar way, you must multiply 9 the unite in the multiplier, by every leverall figure in the multiplicand; instead thereof if you looke in the ninth place of the Bones, as the lines direct, gives you 8712, the number required; which place under 9, as in the example: but note that you must read them backward, 2178.

Againe, as before; for seven times, looke in the 7 place, and there you will finde 6776, which place under 7, the place of tens.

C 4

Againe,

## Division.

Againe, as before, looke in the fifth place, and there you will find 4840. which place under 5, the place of hundreds.

Draw a line, and adde them together, gives you 560472, the product, as in the example,

---

## Division.

**D**ivision serveth to divide any number in as many parts as you please, and consisteth of three numbers: the Divisor, the Dividend, and the Quotient for looke how often the Divisor is contained in the Dividend, so many figures it produceth in the Quotient: or, looke how often 1 is contained in the Divisor, so many times the Quotient is contained in the Dividend, which is all one. The prooffe of division: As if you were to divide 888 pound amongst 4 men, the question is, what each man must have.

A gene.



# Division.

29

A generall  
Rule : Before  
you aske the  
Question, prick  
out the num-

ber in the Dividend, that doth contains the  
Divisor, as here : 4 the Divisor will bee  
found in 8, the first figure of the Divi-  
dend : as in the example is pointed at by  
the finger.

Divis. Divid. Quor.

4 | 888 |



First worke,  
say, how many  
times can you  
finde 4 in 8,  
which is 2  
times : place 2  
in the Quoti-  
ent for so often containing the Divisor.

4 | 888 | 2

8

0

Secondly, multiply 2 the Quotient, by  
4, the Divisor makes 8 ; place 8 under  
the prickt number, as in the example.

Thirdly, draw a line and subtract, take 8  
out of 8, rests 0, which you may place un-  
der, if you please.

First

First worke;  
take downe 8,  
as in the exam-  
ple: and as be-  
fore, the Que-  
stion being the  
same as the  
former, I place  
2 in the Quo-  
tient, which  
multiplied by 4, makes 8, which 8 place  
under 8, as in the example, and the remai-  
ner will be 0.

$$\begin{array}{r}
 \overline{4 \overline{) 888} \overline{) 22}} \\
 \underline{8} \phantom{00} \phantom{00} \phantom{00} \\
 \phantom{0} \underline{08} \phantom{00} \phantom{00} \\
 \phantom{00} \underline{8} \phantom{00} \phantom{00} \\
 \phantom{000} \underline{08} \phantom{00} \\
 \phantom{0000} \underline{8} \phantom{00} \\
 \phantom{00000} \underline{08} \phantom{00} \\
 \phantom{000000} \underline{8} \phantom{00} \\
 \phantom{0000000} \underline{0}
 \end{array}$$

Againe, take  
downe 8, as in  
the example,  
and note that  
for every fi-  
gure thus taken  
downe, you  
must ever aske  
the Question,  
and finde a fi-  
gure in the  
Quotient, or  
acypher, if to

# Division.

27

able to containe the Divisor : as here, the  
Question being as the former, I place 2 in  
the Quotient, and the remainder is 0. and  
the worke ended, makes 22 a pound the  
answer.

As in the former proposition you may  
see that 4 the Divisor, is contained in 888  
the Dividend, 222 times, and the Quoti-  
ent is contained in the Dividend as often  
as 1 is contained in the Divisor, which is 4  
times.

Divide 28770 pound amongst 24 men,  
the Question is, what each man must have.  
answer, 342 pound, 10 shillings.

84 cannot be  
found in 28, therefore you  
must finde the  
Divisor in 287, under which ever  
place a pricke, as in the example,

Note, that men is the Divisor, money  
the Dividend, and Answer is the Quoti-  
ent.

First,

## Division

First worke: say, how many times can you finde 8, the first figure in the Divisor? In 28 the two first figures in the Dividend, which is 3 times, and the remainder is 47, in which 4, the next figure in the Dividend will be found as often: wherefore place 3 in the Quotient, for so often containing the Divisor.

Secondly, multiply 3 the Quotient, by the Divisor, makes 252, which place under the prick number, as in the example.

Thirdly, draw a line, and subtract, rests 35

First worke: draw downe the next 7 unto the remainder 35, makes 357. and say, how many times can you finde 8 in 35, which is 4 times, place 4, in the

$$\begin{array}{r}
 84 \overline{) 28770} \quad 34 \\
 \underline{252} \phantom{0} \\
 357 \\
 \underline{336} \phantom{0} \\
 210
 \end{array}$$

Quotient,



# Division.

29

Quotient, for so often containing the Di-

Secondly, multiply 4 the Quotient, by 8 the Divisor, makes 336, which place under 357. as in the example.

Thirdly, draw a line, and subtract, rests

First worke ;

Take downe 0

unto the re-

mainer 21,

makes 210,

and say, how

many times can

you finde 8 in

21, which is 2

times. Place 2

in the Quoti-

ent.

Secondly, mul-

tiple 2 by the Divisor, makes 168, which

place under 210, as in the example.

Thirdly, draw a line and subtract, rests 42,

which place at the end of the Quotient for

a fraction, or part of the Divisor, that is, 1

halfe.

$$\begin{array}{r}
 84 \overline{) 28770} \quad | \quad 342 \frac{1}{2} \\
 \underline{252} \phantom{0} \\
 357 \phantom{0} \\
 \underline{336} \phantom{0} \\
 210 \phantom{0} \\
 \underline{168} \phantom{0} \\
 42
 \end{array}$$

Divide

## Division

Divide 134322 pound amongst 488.  
 Question is, what each man must have  
 Answer, 275 pound, 5 shillings.

488 cannot be  
 found in 134, 488 | 134322 |  
 the 3 first figures  
 in the Dividend,  
 wherefore you must finde your Divisor in  
 1343, where place a pricke.

First worke :  
 say, how many  
 times can you  
 find 4 in 13,  
 which is but 2  
 times; place 2  
 in the Quotient.

488 | 134322 | 2

976

367

Secondly, multiply 2 the Quotient, by  
 the Divisor, makes 976. as in the Ex-  
 ample.

Thirdly, draw a line and subtract, resto  
 367.

First

# Division.

34

First worke :

take downe 2

to the remai-

ner, 367, makes

3672. and say,

how many

times can you

find 4 in 36,

which is 9

times, but then

you cannot find

88 the rest of the figures

in the Divisor 9 times, wherefore you can-

not take it so often ; for looke how often

you find the first figure of the Divisor, so

many times you must finde the rest of the

figures in the remainder of the Dividend,

143, as in this example : you cannot take

8 times, but 7 times, wherefore place 7

in the Quotient, for so often containing the

Divisor.

Secondly, multiply 7 the last figure in

the Quotient, by the Divisor, makes 3476,

which place under 3672. as in the Ex-

ample.

Thirdly, draw a line and subtract, rests

256.

First,

$$\begin{array}{r} 488 \overline{) 134322} \end{array}$$

$$\begin{array}{r} 976 \end{array}$$

$$\begin{array}{r} 3672 \end{array}$$

$$\begin{array}{r} 3416 \end{array}$$

$$\begin{array}{r} 256 \end{array}$$

First worke,  
take downe 2  
to the remain-  
ner, 256,

makes 2562,  
and say, how  
many times  
can you finde

4 in 25, which  
may be found  
6 times, but  
that will bee  
too much, as

in the exceptions of the last example :  
wherfore you must take but 5 times, place  
5 in the Quotient.

Secondly, multiply 5 the last figure, by  
488, makes 2440. which place under  
2562.

Thirdly, draw a line and subtract, rests  
122. which remainder place at the end of  
the Quotient for a fraction, or part of the  
Divisor : that is, 5 shillings, 1 fourth part  
of a pound.

Now to know what part of a pound any  
unknowne fraction, or remainder after Di-  
vision

$$\begin{array}{r} \text{488} \overline{) 134322} \end{array}$$

$$976$$

$$3672$$

$$3416$$

$$2562$$

$$2440$$

$$122$$



vision is, as in the former divisions : the remainder was the even parts of a pound, the one  $\frac{1}{2}$  parts ; that is, one halfe, and the other  $\frac{1}{4}$  parts, one fourth part : to worke these or the like, adde at the end of your dividend, 3 cyphers, and draw a prime line to worke the remainder, in case there be any ; but if there be no remainder, then they serve for nought : which Cyphers thus added, when they are divided will bring forth primes, seconds, and thirds in the Quotient, every prime being in coyne 2 shillings, and 5 Seconds, 1 shilling : and all under 5 Seconds, the parts of a shilling : So that the shillings being subtracted, the remainder will be 16 many farthings, with this Provifo, that all the numbers under 24 is the just number of farthings ; and all above 24, is ever 1 farthing to much, which Rule holdeth for a truth, from 1 farthing to 11 pence, 3 farthings, without the parts of a farthing.

You may call the Cyphers thus added, primes, seconds, and thirds : each Cypher taking his name from his distance from the prime line.

The use of Napeirs Bones in Division:  
 Note, that in dividing by them, you must  
 ever place the Bones to the Divisor, as in  
 the example.

Divide 87 pound amongst 9 men; un-  
 to which adde cyphers, as by the former  
 Rule to worke the Remainder.

9	1
8	2
7	3
6	4
5	5
4	6
3	7
2	8
1	9

primes,  
seconds,  
thirds,

$$\begin{array}{r}
 9 \overline{) 87 \ 00 \ 0} \\
 \underline{81} \phantom{00} \\
 6 \phantom{00}
 \end{array}$$

Say, how may times can you  
 find 9 in 87. Look in the Bones  
 for 87, or finde it betweene 2  
 numbers. 81, the numbers in the 9 place  
 is to little, wherefore you must take it, and  
 his place is 9. which 9 place in the Quo-  
 tient, for so often containing the Divisor;

and

# by the Bones.

and the numbers in the 9 place, which is 81, place under 87. draw a line and subtract, rests 6.

Take downe the prime Cypher to the remainder 6, makes 60. Looke in the Bones for 60. or finde it between 2 numbers, the seventh place is to much, and the sixt place is to little, you must never take the greater number, but ever the lesser; place 6 in the Quotient, and place 54, the figures in the sixt place, under 60. draw a line and subtract, rests 6. as in the example.

$$\begin{array}{r}
 87 \\
 \underline{81} \\
 6 \\
 60 \\
 \underline{54} \\
 6
 \end{array}$$

D 2

Take

$$\begin{array}{r}
 9 \ 87 \ 0 \ 0 \ 0 \ 9 \ 6 \\
 \underline{81}
 \end{array}$$

$$\begin{array}{r}
 60 \\
 \underline{54} \\
 6
 \end{array}$$

## Division

Take downe the second Cypher to the remainder 6, makes 60, which working, I omit the Question, being againe 60 as the former, will produce 6 in the Quotient, wherefore againe, place 54 under 60, draw a line, and subtract, rests 6. as in the example.

$$\begin{array}{r}
 9 \overline{) 870009} \\
 \underline{81} \phantom{000} \\
 60 \phantom{00} \\
 \underline{54} \phantom{00} \\
 60 \phantom{00} \\
 \underline{54} \phantom{00} \\
 6
 \end{array}$$

Take downe the 3 cypher to 6, the remainder, makes 60, which worke againe, being the same as the former: place 6 in the Quotient, & 54 under 60. draw a line and subtract, rests 6, as in the Example.

$$\begin{array}{r}
 9 \overline{) 870009} \\
 \underline{81} \phantom{000} \\
 60 \phantom{00} \\
 \underline{54} \phantom{00} \\
 60 \phantom{00} \\
 \underline{54} \phantom{00} \\
 60 \phantom{00} \\
 \underline{54} \phantom{00} \\
 6
 \end{array}$$



Note, that when you divided pounds, you brought forth pounds in the Quotient, and when primes, then primes; and so of Seconds and Thirds, each fraction in the Quotient taking his name from his Devision.

Now according to the former Rule, every Prime is 2 shillings, as in this example, there is 6 Primes, that is, 12 shillings, under which I place a cypher.

Againe, 5 Seconds is 1 shilling, which subtracted from 6, rests 1; which I place under 6. Againe, take downe the 6 thirds and place them before 1, as in the example, makes 16 farthings, so that by the former Rule, 16 is under 14, and therefore you must not take away any. Gives you 9 pound, 13 shillings, and 4 pence, each mans share in 87 pound.

Take downe 8 to the remainder 17 makes 2 and the how many times can you find 8 in 17? 2 which you cannot; therefore place a Cypher in the Quotient for too little to containe the Divisor; as in the example.

Note

# Division

5	3	4	1
1	0	6	1
1	5	9	1
2	0	1	1
2	1	2	0
3	0	1	8
3	2	1	2
4	0	7	4
4	2	7	3

Say, how many times  
can you find 5 4 in 2687.  
Looke in the Bones for  
2687, or find it betweene  
2 numbers, the number in  
the first place is too much,

and the numbers in the first place too lit-  
tle: take the lesser, and place 5 in the  
Quotient for his place; then place 2670,  
the numbers in the first place under 2687  
as in the example: draw a line, and sub-  
tract, rests 17.

Take downe 8 to the remainder 17, makes  
178, and say, how many times can you find  
5 4 in 178. which you cannot; there-  
fore place a Cypher in the Quotient, for  
too little to containe the Divisor; as in  
the example,

Note,

# By the Bones.

39

Note, that for every figure you thus take downe, you must ever find a figure in the Quotient, if too little, as in this, then a Cypher.

$$\begin{array}{r} 534 \overline{) 26878 | 000 | 50} \\ \underline{2670} \\ 178 \end{array}$$

Take downe the prime cypher unto 178, makes 1780, which Division will bring forth in the Quotient primes, looke in the Bones for 1780, the fourth place is too much, and the third place too little, place 3 in the Quotient, and draw a prime line between the pounds and primes, and place ever prickles over their heads for fractions: then place 1602, the numbers in the third place, under 1780 draw a line, and subtract, rests 178.

D 4

Take

# Division

Take downe  
the second cy-  
pher to the re-  
mainer 178,  
makes 1780.  
which Divi-  
on will bring  
forth seconds  
in the Quoti-  
ent, which  
working 16.

$$\begin{array}{r} 534 \overline{) 26878} \quad 000 \quad 56 \\ \underline{2670} \phantom{000} \\ 1780 \\ \underline{1602} \phantom{000} \\ 1780 \\ \underline{1602} \phantom{000} \\ 178 \end{array}$$

mit, the numbers being the same as the  
former, will bring forth 3; wherefore  
place 3 in the Quotient, and place the fi-  
gures in the third place, under as before,  
and the remainder will be againe, 178.

Take downe  
the third cy-  
pher to the  
remainder, 178  
makes 1780,  
and as before,  
being the same  
will produce  
a in the Quo-  
tient, and the  
remainder will

$$\begin{array}{r} 534 \overline{) 26878} \quad 000 \quad 56 \quad 33 \\ \underline{2670} \phantom{000} \\ 1780 \\ \underline{1602} \phantom{000} \\ 1780 \\ \underline{1602} \phantom{000} \\ 178 \end{array}$$

+

be



## by the Bones.

be 178, which worke ended, gives you  
50 pound, 3 primes, 3 seconds, and 3 thirds:  
which according to the former Rule,  
makes 6 shillings, 8 pence: the shillings  
being subtracted, the remainder 33, being  
above 24, produceth 1 too much, that is,  
32 farthings, as in the Quotient you may  
behold.

---

Againe, divide 6584 pound, amongst  
85 men, the Question is, what each man  
must have? Answer, 77 pound, 4 primes,  
5 seconds, 2 thirds: in Coyne, 9 shillings  
2 pence.

---

In case that you cannot divide but by  
the Bones onely, and have them not, in-  
stead of them first double the Divisor,  
makes 170, which place under the Divi-  
sor: againe, adde the first and second num-  
bers together, makes 255, which place un-  
der the second number: and thus adde the  
last with the first by Arithmetically progres-  
sion, 9 times, as in the Example you may  
behold, which severall workings I omit,  
being the same with the Bones.

The

# Division

The prooffe of Division is by adding the numbers in the worke together, (the dashed numbers excepted) and if it brings forth the Dividend, it is true, else not, as in the example.

1851	6584	000	77458
1702	595		008
2553	624		
3404	595		
4255			
5106			
5957			
6808			
7659			

the remainder, if there be any, and if  
bring forth the Dividend, it is true. The  
rooffe of Multiplication is, by dividing  
the Product by the Multiplicand, and the  
Multiplier will be the Quotient.

Thus you have Multiplication and Divi-  
on performed 3 severall wayes ; and  
which is the best, I leave to every mans  
discretion, as in the Market, one chusing  
that as best, which another refuseth.

Example. Divide  
1000 into ten equal parts : and that  
which is called primes, taking his name  
from his first Division.

Again, divide 1 prime into 10 equal  
parts, and that Division is called seconds,  
from his second Division.

Again, divide 1 second into 10 equal  
parts : and that Division is called thirds,  
from his third Division.

Again, divide 1 third into 10 equal  
parts : and that Division is called fourths,  
from his fourth Division.

Each fraction taking his name from his  
ten Divisions, or divisions from his prime  
line, which is all one.

Note

# THE ART OF TENNES, OR DECIMALS.

## I. Of Numeration.

**N**umeration serveth to expresse the parts of an unite. Example. Divide 1 pound into ten equall parts: and that Division is called primes, taking his name from his first Division.

Againe, divide 1 prime into 10 equall parts, and that Division is called seconds, from his second Division.

Againe, divide 1 second into 10 equall parts: and that Division is called thirds, from his third Division.

Againe, divide 1 third into ten equall parts: and that Division is called fourths, from his fourth division: and so *ad infinitum*, each fraction taking his name from his of-ten Divisions, or distance from his prime line, which is all one.

Note,



## *Numeration in Decimals.*

45

Note, that 1 Shilling in Decimals is thus expressed, 05 seconds, having no part of the first Division, but 5 of the second Division. A generall rule in laying downe a fraction: although sometimes for the smallnesse of the fraction there be no primes, as in the former, yet you must place a cypher instead thereof, to keepe his place: by which meanes, the rest that follow are the better distinguished. Again, as if you were to set downe 3 halfe pence, which in decimals stands thus, 00625 fifts, placing in the worke prieks over their heads, to distinguish them from whole numbers, which cyphers thus placed, sheweth, that there is no part of the first or second Divisions, but 6 thirds, 2 fourths, & 5 fifts. Now by the foresaid Reasons, knowing the parts of a pound unto 1 shilling, which at this time omitting, untill you have the parts from 1 shilling unto 1 farthing, which is also performed by Division.

A generall Rule that 5 is the halfe of any decimal denomination, whether an unite, prime, second, third, fourth, fifth, or sixth, &c. Divide any decimal fraction by 2, and the Quotient will give you halfe. Example.

# Numeration in Decimals

ample. Divide 05 seconds, expressing shilling, by 2, the Quotient will give you 025 thirds, the fraction, expressing pence. Example,

Beginne and say,  $2 \overline{) 0.5 \mid 0.25}$   
 the halfe of 0 is 0, place 0 in the Quotient to keep the place of primes; the halfe of five Seconds, is two Seconds and an halfe; place 2 in the Quotient for Seconds, and 5 in the third place for halfe.

Or otherwise  $40 \overline{) 1.000 \mid 0.25}$   
 thus. Divide 1 pound (adding Cyphers, and draw a prime line) by 40 the number of fixpences in 1 pound, will give you the fractions, expressing 6 pence, which is all one with the former. And thus to know the fractions of any part of a pound, divide 1 pound (adding Cyphers at pleasure) by the numbers containing 1 pound, the Quotient will give you the Decimall fraction, expressing the same. As if you would know how to expresse 1 farthing.

# *Numeration in Decimals.*

47

thing. Divide 1 pound by 960, the number of farthings in 1 pound, the Quotient will give you 0010416 sevenths, the fractions expressing 1 farthing.

Againe, divide  $2 \overline{) 0.25} \overline{) 0.125}$   
025 thirds, expressing 6 pence by

2, gives you the fraction expressing 3 pence: for 0 place 0. The halfe of two Seconds is 1 Second, and the halfe of five Thirds, is two Thirds and an halfe, as in the example.

Again, divide  $3 \overline{) 0.125} \overline{) 0.0625}$   
0125 fourths, the fraction expressing 3 pence, gives you three halfe halfe pence, for 0 place 0. The halfe of 1 Second is no Seconds, the halfe of 12 thirds, is 6 thirds, and the halfe of 5 fourths is 2 fourths and an halfe.

Again, divide  $4 \overline{) 0.0625} \overline{) 0.03125}$   
00625 fifths, the fraction expressing three halfe pence, gives you three far-

## Numeration in Decimals:

farthings : place 2 Cyphers, and say, the halfe of 6 thirds is 2, the halfe of 2 fourths is 1, and the halfe of 5 fifths is 1 fifth and an halfe,

For the last worke, divide 003125 sixths by 3, will	$\begin{array}{r} 3003125 \\ \hline 3 \overline{) 003125} \end{array}$
---	--

give you 1 farthing, the least denomination in English Coyne and the remainder will be  $\frac{1}{2}$  a great part of the Divisor, which if you multiply for the prooffe, and not adde the remainder, will bring forth a lesse number then the Dividend: so that in multiplying 0010416 sevenths by any other number, it cannot fully bring forth the truth in the product by the want thereof. To supply the defect, make 6, the last figure in the Quotient, 7. so that 1 farthing will then stand thus, 0010417 sevenths, by which meanes in multiplications it will cast ever the prime line the truth.

Now by these Divisions, knowing how 1 farthing will stand in Decimals, 3 farthings, 3 halfe-pence, 3 pence, and 6 pence,



## Numeration in Decimals

pence; a table may be made by Addition, from 1 farthing to 14 pence 3 farthings; which I purpose to omit, making choyce only of 7 numbers, because they will be easily gained by heart, and upon all occasions will be performed by Addition, which numbers are 1 farthing, the same doubled, makes 2 farthings, 3 halfe-pence, 3 pence, and 6 pence: now adde 3 pence and 6 pence together, makes 9 pence, as in the example following.

Note, that all the numbers that end with 25 and 75, are even parts of an 100 his unite: and if you begin with 003 1 25 sixths, the least even number of the parts of a shilling, and encreasing it by Arithmetical progression, you would find 14 even numbers in the parts of a shilling.

The

# *Numeration in Decimals.*

The Table of the parts of a shilling, from 1 farthing, to 11 pence, 3 farthings.							Shillings	Pence
Primes	Seconds	Thirds	Fourths	Fifths	Sixths	Sevenths		
1	0	0	1	0	4	1	7	1 05
2	0	0	2	0	8	3	4	2 1
3	0	0	3	1	2	5	1	3 15
4	0	0	4	2	5	1	0	4 2
5	0	0	5	3	0	1	1	5 25
6	0	0	6	4	0	1	2	6 3
7	0	0	7	5	0	1	3	7 35
8	0	0	8	6	0	1	4	8 4
9	0	0	9	7	0	1	5	9 45
10	0	0	10	8	0	1	6	10 5
11	0	0	11	9	0	1	7	11 55
12	0	0	12	10	0	1	8	12 6
13	0	0	13	11	0	1	9	13 65
14	0	0	14	12	0	1	10	14 7
15	0	0	15	13	0	1	11	15 75
16	0	0	16	14	0	1	12	16 8
17	0	0	17	15	0	1	13	17 85
18	0	0	18	16	0	1	14	18 9
19	0	0	19	17	0	1	15	19 95

The Table from 1 Shilling to 19 Shillings, in Primes, and Seconds.

The use of the Tables serveth in stead of Reduction, to expresse the parts of a pound : as if you would know how 3 shillings, 7 pence, 2 farthings, would stand in Decimals : Look in the Table of Shillings for 3 shillings, over against which you will

# Numeration in Decimals

58

will find 1 prime, 5 seconds: and for 7 pence, 2 farthings, looke in the Table of the parts of a shilling, and place downe the fractions of  $\frac{1}{4}$  6 pence, and  $\frac{1}{8}$  2 halfe-pence, and adde them together, primes under primes, seconds under seconds, thirds under thirds, &c. each denomination under each; which

Numbers added together, gives you 1 prime, 8 seconds, 1 third, 2 fourths, and 5 fifths; the fraction expressing 3 shillings 7 pence, 2 farthings, as in the Example.

$$\begin{array}{r} . \\ 15 \\ 025 \\ 00625 \\ \hline 18125 \end{array}$$

Againe, as if you were to expresse 7 shillings, 11 pence, 1 farthing. Looke in the Tables, and over against 7 shillings, you will finde 3 primes, 5 seconds,

$$\begin{array}{r} . \\ 35 \\ 0375 \\ 00625 \\ 003125 \\ \hline 396875 \end{array}$$

E 2

and

## Numeration in Decimals.

and for 11 pence, 1 farthing, place the fractions of 9 pence, 3 halfe-pence, and 3 farthings, which added together, makes 3 primes, 9 seconds, 6 thirds, 8 fourths, 7 fifths, and 5 sixths; expressing 7 shillings, 11 pence, 1 farthing. And thus any part of a pound may be set downe in Decimals. And although these 7 numbers sometime cause a great addition, yet are they easily gained by heart, but the whole 48 numbers, for so many farthings are in a shilling, cannot without much difficulty.

Againe, when you are to set downe whole numbers with fractions, as 24 pound 10 pence, 2 farthings place 24 as in the example, and draw a prime line between the pounds, and the parts of a pound, place the fractions of 9 pence, and 3 halfe-pence the one under the other, and adde them together, makes 24, 04375 fifths. Now fit for Multiplication, or Division, as in the working of questions hereafter will more plainly

lb. | . . . .

24 | 0375

006 5

24 | 04375



## *Numeration in Decimals.*

453

plainly appeare. The figures on the left hand the prime line being pounds, and the figures on the right hand the prime line the parts of a pound, in Primes, Seconds, and Thirds, &c. and thus much may suffice for the expressing the parts of a pound.

---

Now it is fit to know a Fraction the vulgar way, both his Nomination, and Denomination. The onely cause of producing a Fraction, is Division; The Divisor, of what number soever consisting, produceth but 1 in the Quotient, by which meanes the Divisor is made an unite, and the Remainer his parts; as  $\frac{1}{2}$  part, or  $\frac{2}{4}$  parts, or  $\frac{12}{24}$  parts, or  $\frac{21}{42}$  parts of a pound. But mee thinkes I heare some challenge some Interest in Subtraction: to which may be concluded, That Division hath the same affinity to Subtraction in diminishing, as Multiplication hath to Addition in increasing.

Note that the figures above the line, is called the Numerator, and the figures under the line the Denominator. Now to know their Decimall numbers, adde 5 or 0 Cyphers at pleasure to the Numerator,

*Numeration in Decimals.*

or remainer, and draw a prime line : then divide by the Denominator, or Divisor, and the Quotient will give you his decimall numbers, as in the example of  $\frac{225}{4}$ , thus divided, gives you 473684 sixths, the decimall parts of his unite. Which working I have omitted of purpose for your practice.

Now to know his true valew in coyne ; multiply 437684 sixths, by 20, the number of shillings in 1 pound will give ye u on the left hand the prime line, 9 shillings, cutting off as many fractions as you have in the multiplicand Again multiply 47368 fifths, the remainer on the right hand the

$$\begin{array}{r}
 \dots\dots\dots \\
 473684 \\
 20 \\
 \hline
 \text{£. } 9 \overline{) 473680} \\
 \hline
 47368 \\
 12 \\
 \hline
 94736 \\
 47368 \\
 \hline
 \text{£. } 5 \overline{) 68416} \\
 \hline
 68416 \\
 4 \\
 \hline
 \text{q. } 2 \overline{) 73664} \\
 \hline
 \text{prime}
 \end{array}$$

## Numeration in Decimals.

55

prime line by 12, the number of pence in 1 shilling, gives you 5 pence, on the left hand the prime line, and the Remainder the parts of a penny; which multiplied by 4, the number of farthings in 1 penny, gives you on the left hand the prime line 2 farthings, and the Remainder  $\frac{7}{10} \frac{1}{10} \frac{4}{10}$  the parts of a farthing almost 3 quarters.

Note, that every Decimall number takes his Denomination from his unite, according to the number of fractions, more or lesse; and adde as many cyphers under, as you have fractions; and place 1 on the left hand, the Cypher, for his unite: as in the example of the parts of a farthing.

The parts in measure or weight, whether of a yard, elle, perch, foot, or inch, is likewise to be expressed in Decimals, as the parts of a pound. Example,  $\frac{1}{4}$  part of a Perch.

1	of a Pound, 5	shillings	}	25
4	in decimals, 25	seconds,		100
So in measure.				

$\frac{1}{4}$  Of

# *Numeration in Decimals.*

$\frac{3}{4}$  Of a Pound, 15 shillings }  
 in decimals, 75 seconds. }  $\frac{75}{100}$   
 So in measure.

$\frac{1}{5}$  Of a Pound, 4 shillings }  
 in decimals, 2 primes }  $\frac{2}{10}$   
 in measure.

$\frac{1}{3}$  Of a pound, 6 shillings, }  
 8 pence in decimals, }  $\frac{333333}{1000000}$   
 333333 sixths, in mea-  
 sure.

$\frac{3}{4}$  and  $\frac{1}{2}$  quarter, 17 }  
 $\frac{1}{4}$  shillings, 6 pence, }  
 which if you set }  $\frac{875}{1000}$   
 downe, as in the ta-  
 bles, and add them  
 together, gives you  
 875 thirds, in mea-  
 sure.

Again, if at any time you shall meet  
 with a Fraction, whose denominations are  
 as many as your antient and Noble Brit-  
 taines; whose names are as a pedigree of  
 Antiquity: as  $\frac{1}{2}$  of  $\frac{1}{2}$  of  $\frac{1}{2}$  of  $\frac{1}{2}$  of  $\frac{1}{2}$  of  $\frac{1}{2}$  of  
 $\frac{1}{2}$  of  $\frac{1}{2}$  of  $\frac{1}{2}$  of a pound: multiply the nu-  
 mer a-



## Numeration in Decimals.

87

merators or remainers the one in the o-  
ther for a new numerator, gives you 36283  
Then multiply the denominators or Divi-  
sors in themselves, gives you 362880, for  
a new Denominator, and they will stand  
thus,  $\frac{36283}{362880}$ . Now adde Cyphers unto the  
Numerator, and draw a prime line for your  
Dividend, which divide by the Denomi-  
nator, will give you 1 prime in the Quoti-  
ent, in Coyne 2 shillings.

### Addition in Decimals.

	P.		.....
Received	32		959375
			27040615
<hr/>			
Total	60		000000

Thus <  $\left\{ \begin{array}{l} 10 \text{ Sixths makes } 1 \text{ fifth.} \\ 10 \text{ Fifths makes } 1 \text{ fourth.} \\ 10 \text{ fourths makes } 1 \text{ third.} \\ 10 \text{ Thirds makes } 1 \text{ second.} \\ 10 \text{ Seconds makes } 1 \text{ prime.} \\ 10 \text{ Primes makes } 1 \text{ unite.} \end{array} \right.$

### Subtraction in Decimals.

Received	72		393750
Layed out	68		428125
<hr/>			
Rests			3965625
<hr/>			
Prooffe	72		393750

Multi-

# Multiplication and Division

## Multiplication, and Division in Decimals.

**T**His Multiplication and Division may serve for the prooffe the one of the other, as in the former discourse I have already shewed, that Multiplication is the prooffe of Division, and Division the prooffe of Multiplication. Example.

Multiplic

# in Decimals.

59

Multiplicand 7.25

Multiplier 8.0375

3515  
5075  
2175  
58.000

Multiplicand, Product, the Multiplier, the  
Divisor. Dividend. Quotient.

7.25 58.00 8.0375

1450 2 1718

2175 3 2175

3900 4

3625 5 5437

4350 6 5075

5075 7 3625

5800 8 3625

6525 9

Note, that when you have in the Divisor, whole numbers, and fractions, as in this example of Division; the fractions in the Divisor have no part in marking out the whole numbers in the Quotient: but  
look

## The Rule of Practice

Looke how often the whole numbers in the Divisor will bee found in the whole numbers of the Dividend, so many whole numbers you will have in the Quotient : as here ; 7 cannot be found in 5, but in 58 ; wherefore you will have one whole number in the Quotient, and the rest that follow will be primes, seconds, and thirds, &c. as in the example.

The Rule of Practice performed  
by Multiplication only, having 1.  
in the first place.

**N**Ote, that 1, is 1 place — 2 place  
neither mul- 3 place — 4 place  
tplied nor divided  
by which Art the  
Rule of Practice is performed by Multipli-  
cation onely ; or by Division onely with-  
out Reduction, and is knowne from the  
Rule of Three, by having 1. in the first, se-  
cond, or third place : the first place is ever  
the Divisor ; the second and third, the pla-  
ces of Multiplication.

Note, that when you are to multiply by



## by Multiplication onely

61

in unite, as 10, 100, 1000, 10000, &c. It is performed by adding as many cyphers as belongeth to the unite. Example;

If 1 yard of any thing cost 3 shillings, 4 pence, 2 farthings: what 100 yards?

Set ever the price downe as in the decimal tables of the parts of a pound makes 16875 fifts: unto which, adde the 2 Cyphers belonging to 100 at the right hand of the price, and cut off with a prime line 5 Fractions on the right hand, beginning with the Cyphers, and it will stand thus; 16 87500 fifts: that is, 16 pound, 8 primes 7 seconds, and 5 thirds: in coyne, 16 pound 17 shillings, 6 pence, the price of 100 yards

Againe, if 1 ell of any thing cost 7 pence 2 farthings: what 1000 ells? Set downe the price in Decimals, makes 03125 fifts. Now because 1000 hath 3 Cyphers, adde 3 Cyphers on the right hand, and cut off with a prime line as many fractions as the price consisted of, which is 5, beginning with the Cyphers, and it will stand thus, 03125000 that is, 31 pound, 2 primes, 5 seconds: in Coyne, 31 pound, 5 shillings, the price of 1000 ells. And thus of any other unite, adding as many cyphers as belongeth to the same.

If

If 1 yard of dowlace  
cost 1 shilling, 2 pence,  
1 farthing : what 375  
yards?

Set downe the price  
as in the Tables of the  
parts of a pound, makes  
059375 sixths, which  
multiply by 375, and  
cut off 6 Fractions,  
gives you 22165625

sixths, that is, 22 pound, 2 primes, 6 seconds, 7 thirds, 6 fourths, 2 fifths, and 5 sixths : in Coyne 22 pound, 5 shillings, 3 pence, 3 farthings ; the price of 375 yards, as in the example.

If 1 pound Factorage,  
give 10 pence, 2 far-  
things : what 1256  
pound, 10 shillings Fa-  
ctorage : Set downe  
the price as in the Ta-  
bles, makes 04175  
fifts, which multiplied  
by 125615 primes,  
cutting off as many  
Fractions as you have

059375

375

296875

415615

178125

.....

32265625

125615

.....

04375

62825

87915

37695

50260

54971875

in

in your Multiplicand, and Multiplier, which is six, gives you 54 | 971875 sixths, that is, 54 pound, 9 primes, 7 seconds, 1 third, 8 fourths, 7 fifths, 5 sixths : in Coyne, 54 pound, 19 shillings, 5 pence, 1 farthing.

If 1 ounce of Plate  
cost 5 shillings, 3  
pence : what 234  
ounces ? Answer,

$$\begin{array}{r} \text{I} \quad \text{Z} \quad 2625 \\ 234 \quad \text{Z} \quad 61415 \end{array}$$

61 pound, 8 shillings, 6 pence. Note that you shall finde in the figure, the price, and answer in decimals, as in the tables, which working being the same as the former, I leave it to your Practice.

If in 1 pound of  
nayles, there bee  
72 nayles : how  
many nayles are  
there in 56 pound, and  $\frac{1}{2}$  ?

$$\begin{array}{r} \text{I} \quad \text{Z} \quad 72 \\ 56\frac{1}{2} \quad \text{Z} \quad 4068\frac{1}{2} \end{array}$$

Answer, 4068 nayles, as in the exam-  
ple.

If

*The Rule of Practice*

If 1 pound weight  
of Pepper, cost 1  
shilling, 9 pence:  
what 100 weight?

$$\begin{array}{r} 1 \quad 0875 \\ \times 112 \\ \hline 98 \end{array}$$

Note, that 1 hundred weight hath 112 pound to the hundred. Answer, 9 pound, 16 shillings.

If 1 hundred  
weight cost 9  
pound, 16 shil-  
lings: what 15  
hundred;  $\frac{1}{4}$  and

$$\begin{array}{r} 1 \quad 98 \\ \times 151375 \\ \hline 150675 \end{array}$$

$\frac{1}{4}$  quarter? Answer, 150 pound, 13 shillings, 6 pence; as in the example.

If 1 French  
Crowne bee 6  
shillings: how  
many pounds  
English for 2743

$$\begin{array}{r} 1 \quad 3 \\ \times 2743 \\ \hline 8229 \end{array}$$

Crownes? Answer, 822 pound, 18 shillings. But you are not like to have any at the same rate. Note, that our 22 shillings peece of gold is worth 26 shillings, and our 20 shillings peece worth 24 shillings.



# by Multiplication onely

65

If 1 double  
Pistoll be 13  
shillings, 4  
pence : how  
many pounds  
English for 875 double Pistols? Answer,  
583 pound, 6 shillings, 8 pence. The  
King of Spaine hath raised his coyne, 20  
pound in the hundred.

If 1 pound  
Flemish, be 1  
pound, 14  
shillings, 3  
pence Eng-  
lish : how many pounds English, for 150  
pounds Flemish? Answer, 256 pound, 17  
shillings, 6 pence. In Holland our 22 shil-  
lings peece is more worth than in France.

The Rule of Practice performed  
by Division only, having 1, in the  
third place, the place of  
Multiplication.

Note, that when you are to divide by  
an unite, that it is performed by cut-  
ting

## The Rule of Practice

ting off as many whole numbers in the price, as you have cyphers in the unite.  
Example.

If 100 yards cost 16 pound, 17 shillings, 6 pence: what 1 yard? Set downe the price, and draw a prime line betweene the pounds, and the parts of a pound, thus, 16 8 75 thirds: Now becaule 100 hath 2 Cyphers, you must draw a prime line before the 2 whole numbers, and then the whole numbers are become fractions; and will stand thus, 1 16 8 75 fifths: that is, 1 prime, 8 seconds, 8 thirds, 7 fourths, 5 fifths: in Coyne, 3 shillings, 4 pence, 2 farthings, the price of 1 yard.

The prooffe of the former Question performed by Multiplication.

If 1000 ells cost 31 pound, 5 shillings: what 1 ell? Set downe the price thus, 31 | 25 seconds. Now becaule 1000 hath 3 Cyphers, and the whole numbers are but 2, and you must cut off 3; to supply the want thereof, you must in case adde a Cypher before the whole numbers instead of a whole number, thus, gives you 1 03 125 fifths: by which meanes the whole numbers

# by Multiplication onely

67

bers are turned into fractions: that is, 0 primes, 3 seconds, 1 third, 2 fourths, 5 fifths, in Coyne, 7 pence, 1 farthings, the price of 1 ell, the prooffe also of the former Question.

If 375 yards	—	—	—
of Dowlace	375	22   265 625	059375
cost 22 pound	—	1875	—
5 shillings, 3	—	3515	—
pence, 3 far-	—	3375	—
things: what	—	1406	—
1 yard? An-	—	1125	—
swer, 1 shil-	—	2812	—
ling, 2 pence,	—	2625	—
1 farthing. To	—	1875	—
worke the	—	1875	—
fame, set	—	—	—
downe the	—	—	—
price, & draw	—	—	—

a prime line betweene the pounds, and the parts, thus, 22 | 265 625 sixths, which di-  
 vided by 375, the Quotient gives you  
 059375 sixths: that is, 0 primes, 5 se-  
 conds, 9 thirds, 3 fourths, 7 fifths, and 5  
 sixths.

Note, that when the pricke falleth upon  
 F 4 pounds,

# The Rule of Practice

pounds, it will bring forth pounds in the Quotient; when upon primes, then primes, &c. as in this Division the pricke passeth both pounds and primes, and falleth upon seconds: wherefore in this case you must ever place a Cypher instead of primes to keepe his place, as in this example.

<p>If 1256 pound 10 shillings factorage, give 54 pound, 19 shillings, 5 pence, 1 far- thing: what 1 pound facto- rage? Answer 10 pence, 3 farthings.</p>	$  \begin{array}{r}  1256 \overline{) 549718750} \\  \underline{50260} \phantom{0} \\  47148 \phantom{0} \\  \underline{37595} \phantom{0} \\  11437 \phantom{0} \\  \underline{81935} \phantom{0} \\  62825 \phantom{0} \\  \underline{62825} \\  0  \end{array}  $
--	--

To worke the same, set downe the price and draw a prime line, makes 54 | 971875 sixths, which divide by 1256 | 5 primes, the Quotient gives you 04375 fifths: that is, 0 primes, 4 seconds, 3 thirds, 7 fourths, 5 fifths, as in the example. The order of dividing with a Fraction in the Divisor. See fol. 59, 60.



If 112 pound of  
Pepper cost 9 112 918000  
pound, 16 shil-  
lings : what 1 1 0875  
pound? Answer,

1 shilling, 9 pence. Note, that you ever  
adde Cyphers at pleasure, when your Di-  
vidend is lesse then your Divisor : and di-  
vide until you have 4 fractions in the Quo-  
tient at the least, as in the example.

If 243 ounces of  
Plate cost 63 pound 243 6317875  
15 shillings, 9  
pence : what 1 1 2625  
ounce? Answer,  
5 shillings, 3 pence.

If 75 yards of  
Lace cost 12 75 62500  
shillings, 6 pence:  
what 1 yard? 1 00833  
Answ. 3 pence.

Note, that the pricke falleth upon thirds,  
wherefore place 2 Cyphers to keepe the  
place of primes, and seconds, as in the Ex-  
ample.

**The Rule of Practce performed  
by Division onely, having 1, in  
the second Place.**

**I**F 10 shillings buy 100 of dry Fish : how  
many hundreds shall I buy for my 75  
pound, that I may not over-buy my selfe?  
Answer, 150 hundred of dry fish, for your  
75 pound.

To worke these  
Questions, or the  
like : Note, that  
when you are to  
divide whole  
numbers by a  
fraction onely,  
adde to 7, 1 ci-  
pher for primes,

makes the whole number 750 primes :  
which divided by 5 primes, the Quotient  
will give you primes, and the remainder the  
parts of the Divisor, as in this example you  
have no remainder.

$$\begin{array}{r}
 \hline
 5 \overline{) 750} \quad 150 \\
 \underline{5} \phantom{0} \\
 25 \phantom{0} \\
 \underline{25} \\
 0
 \end{array}$$

**If**

# by Division anely.

7

If 9 pence be  
the price of 1  
yard: how ma-  
ny yards shall

$$\begin{array}{r|l} 0374 \overline{) 1700.000} & 453.333 \\ \hline & 1500 \end{array}$$

I buy for my  
17 pound?

$$\begin{array}{r} 2000 \\ 1875 \end{array}$$

Now because  
the first fra-  
ction in the Di-  
visor is se-  
conds, adde to

$$\begin{array}{r} 1250 \\ 1125 \end{array}$$

17 pound, 2 ci-  
phers, makes

$$\begin{array}{r} 1250 \\ 1125 \end{array}$$

1700 seconds  
for your Divi-  
dend: and if

$$\begin{array}{r} 1250 \\ 1125 \end{array}$$

your first fra-  
ction of the

$$\begin{array}{r} 1250 \\ 1125 \end{array}$$

price had beene thirds, you must then  
have added three cyphers to have turned  
it into thirds: unto which draw a prime  
line, and adde more cyphers; then divide  
by 0375 fourths, which is 9 pence, the  
Quotient will give you 453 | 333 thirds:  
that is, 453 yards, and a third of a yard for  
your 17 pound.

Now to know the whole numbers in  
F 4 the

# The Rule of Practice

the Quotient from the parts : Looke how often the first fraction in the Divisor, which is 3, will bee found in the whole numbers, 1700, so many whole numbers you will have in the Quotient, and the fractions that follow the parts of a yard in primes, seconds, and thirds : as in the example.

If 6 shillings  
bee 1 French  
Crowne: how  
many Crowns  
is there in 250

$$\begin{array}{r} 3 \overline{) 2500000} \\ 833 \overline{) 2500000} \\ \underline{2499000} \\ 1000 \end{array}$$

pound? Answer, 833 Crownes, and 1 third of a Crowne : which worke being as the former, I have omitted ; placing in the figure the Question, and Answer in Decimals.

If 4 shillings  
6 pence, be 1  
double Dol-  
ler: how ma-  
ny Dollers in

$$\begin{array}{r} 225 \overline{) 34000000} \\ 1511 \overline{) 34000000} \\ \underline{33990000} \\ 10000 \end{array}$$

340 pound? Answer, 15 11 Dollers, and  $\frac{11}{1000}$  parts of a Doller. Now to know what parts



parts of a Doller, multiply 111 by the number of pence in a Doller, will cast over the prime line pence, and the remain er the parts of a penny.

If 12 shillings  
6 pence give  
1 pound: how  
many pounds  
will 80 pound  
give ?

$$\begin{array}{r} \text{P.} \\ 1 \\ \text{P.} \\ 128 \\ \hline 625 \\ \hline 800 \overline{) 00} \end{array}$$

Answer, 128 pound, as in the example. And thus much may suffice for the Rule of Practice.

how  
what  
is

and

at  
it  
is

*The*

To work this Rule, you must multiply the second terms by the third, for the Dividend: and divide the Product by the first, the Quotient will give you the fourth terms demanded. Example.

## *The Rule of Three, Direct.*

**I**T is called the Rule of Three, because in all Questions in this kinde, you have ever 3 termes given to know a fourth; and hath numbers in the first, second, and third places.

It is also called the Rule of Proportion; for looke what proportion is between the first terme and the second; the same proportion you must have between the third terme and the fourth.

It is likewise called the Golden Rule; for no other reason but for his excellent operations.

It is knowne by  $\left. \begin{array}{l} \text{at} \\ \text{if} \\ \text{as} \end{array} \right\}$  and  $\left. \begin{array}{l} \text{how} \\ \text{what} \\ \text{so} \end{array} \right\}$

To worke this Rule, you must multiply the second terme by the third, for the Dividend: and divide the Product by the first, the Quotient wil give you the fourth term demanded. Example.

If

# The rule of Three Direct.

75

If 12 yards of  
Kersey cost 3  
pound; what  
435 yards?

Answer, 108  
pound, 15 shil-  
lings: to work  
the same, mul-  
tiply 3, the se-  
cond terme,  
by 435 the  
third term for  
the Dividend;  
unto which ad

4 35

3

12 | 1305 | 000, 108 | 75

12

105

96

90

84

60

60

Cyphers instead of Fractions to worke the  
remainder, and the Quotient will give you  
108 | 75 seconds, the fourth terme deman-  
ded, as in the example.

If

## The rule of Three Direct.

If 75 ells cost  
 24 pound, and  
 7 shillings, 9  
 pence: what  
 367 ells? Anf.  
 119 pound, 6  
 shillings, 8  
 pence, 2 far-  
 things, &  $\frac{656}{1000}$   
 parts of a far-  
 thing.  
 Set downe the  
 price, makes  
 24|3875  
 fourths, which  
 multiply by  
 367, makes  
 8950|2125  
 fourths, the  
 Dividend, w<sup>ch</sup>  
 divide by 75,  
 the Quotient  
 gives you  
 119|3361  
 fourths, as in  
 the example.

24|3875

367

170|7125

1463|250

7316|25

75|8950|2125

119|3361

75

145

75

700

675

258

225

271

225

462

450

115

75

30



# The rule of Three Direct.

877

If 100 pound Vfe  
be 8 pound : what  
67 pound, 10 shil-  
lings? Answer, 5  
pound, 8 shillings.

$$\begin{array}{r} 100 \overline{) 8} \\ 67 \overline{) 5} \end{array}$$

Note, as before, you shall find in the figure  
the Question and Answer fit for Multipli-  
cation and Division.

Money lent at Ha-  
zard unto New-  
found land, upon  
safe returne at 25  
pound the hundred:

$$\begin{array}{r} 100 \overline{) 25} \\ 37 \overline{) 9} \end{array}$$

if not, to lose the Principall : I demand  
what : 7 pound, 10 shillings adventure at  
the same rate? Answer, 9 pound, 7 shil-  
lings, 6 pence.

If 7 Inches Diamo-  
ter be 22 inches the  
Circumference, for  
so it is to a small fra-  
ction: what Circum-  
ference 36 inches Diameter? Answer,  
113 inches, and  $\frac{4}{11}$  parts of an inch.

$$\begin{array}{r} 7 \overline{) 22} \\ 36 \overline{) 113} \end{array}$$

If

## The rule of Three Direct.

If 356 ells  
cost 80 pound  
12 shillings,  
9 pence: what  
1424 ells, and  
? Answer, 322 pound, 14 shillings, 4  
pence, 3 farthings, as in the example.

If 12 hun-  
dred weight,  
and  $\frac{1}{2}$  of Hops  
cost 36 pound  
7 shillings, 6  
pence: what 28 hundred,  $\frac{1}{4}$  and  $\frac{1}{8}$  quar-  
ter? Answer, 82 pound, 11 shillings, 5  
pence.

If 3 yards  
and  $\frac{1}{2}$  cost 2  
pound, and  $\frac{1}{2}$   
of a pound:  
what wil 12  
yards and  $\frac{1}{8}$  of  $\frac{1}{2}$  cost? Answer, 7 pound,  
2 shillings, 3 pence, and  $\frac{1}{8}$  parts of a  
penny. For reducing a Fraction of Fracti-  
ons, see Fol. 56, 57.

Tare.

# Tare.

79

Six Chests  
of Sugar at  
6 pound, 10  
shillings the  
hundred: the  
grosse contain-  
ing 49 hun-  
dred,  $\frac{1}{2}$  and 7  
pound; with  
allowance for

	C.	q.	p.
	9	2	17
	7	1	15
	8	2	22
	9	3	05
	8	2	08
	6	1	24
Grosse.	49	2	07

Tare, 1 pound, and  $\frac{1}{2}$  to the hundred, the  
Question is, how many £. the totall Tare.

First worke; set downe in Decimals the  
parts of a hundred, as the parts of a pound.  
Note, that 7 pound weight is  $\frac{1}{2}$  halfe quar-  
ter of 28,  $\frac{1}{4}$  of an hundred; which added to-  
gether, makes

49  $\frac{1}{2}$  5 for this  
the grosse, wch  
multiplied by  
15 5 primes  
the allowance  
for Tare, gives  
you 768 pound  
and  $\frac{1}{2}$  parts  
of a pound.

Grosse	49	5625
Allowance		155
	24	78125
	247	8125
	495	625
Pounds	768	21875
		Second.

So

Tare.

Secondly, turne the pounds into hundreds by dividing the Product  $768|21875$  fifths, by 112, makes 6 hundred and  $\frac{85909}{100000}$  the parts of an hundred.

Thirdly, to know what parts of 100 weight, multiply  $85909$  fifths by 112, the number of pounds in 100 weight, gives you on the left hand the prime line, pounds; and the figures on the right hand the prime line, the parts of a pound, as in the example, makes 96 pound, and  $\frac{85909}{100000}$  parts of a pound: that is, 6 hundred,  $\frac{3}{4}$  and 12 pound the totall Tare.

Fourthly, to know the Neat, subtra<sup>t</sup> the totall Tare, gives you 42 hundred,  $\frac{1}{4}$  and 23 pound



23 pound  
the Neat  
as in the  
example.

	C.	q.	p.
Grosse	49	2	07
Tare	6	3	12
Neat	42	2	23

Lastly, to  
know the  
price of  
the Neat,

C.	I.
42	6
705	5
35	8
	4
	7
	7
	5

Say by  
the Rule of Practice, if 1 hundred cost 6  
pound, 5 primes : what 42 hundred, and  
23 pound. But first you must know how  
the odde 23 pound will stand in Decimals:  
adde Cyphers to 23, and draw a prime line  
which divide by 112, the Quotient will  
produce 20535 fiftis : the fraction expres-  
sing 23 pound : the totall added, makes  
4270535 fiftis : which multiplied by the  
price, 65 primes, as in the example, gives  
you 277584775 sixths : in coyne, 277  
pound, 11 shillings, 8 pence, 1 farthing,  
and 3 parts of a farthing, the price re-  
quired.

G

The

## The Rule of Fellowship.

**T**O worke this Rule, divide the gaine by the totall stocke adventured: then multiply the Quotient by each severall adventure, and the product wil give you their severall gaines. Example.

Three Merchants venture their money. I

A } B } C }	ventured	}	$\begin{array}{r} 57^{\text{r}}.2 \\ 73 \\ 94 \end{array}$	}
-------------------	----------	---	--	---

To totall adventured, 224 the Divisor.

Gained 58 pound, 16 shillings, the Dividend.

Divide the Gaine, 58 pound, 8 primes, adding cyphers, by 224 the totall adventure, the Quotient will give you 2625 fourths, the gaine of 1 pound; that is, 2 primes, 6 seconds, 2 thirds, 5 fourths. Now knowing the gaine of 1 pound, say by the rule of Practice; if 1 pound gaine 2625 fourths: what 57 pound? which working I omit of purpose, onely placing in the figure each severall Question, and Answer, leaving it to your practice, as in the Example.

The

# The rule of Fellowship.

The Worke.

100	100	2625
100	100	2625
100	100	2625
100	100	2625
100	100	2625
100	100	2625
100	100	2625
100	100	2625
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100	100	2625
100	100	2625
100	100	2625
100	100	2625
100	100	2625

The prooffe is by adding their severall gaines together, and if it bring forth their whole gaines, or Dividend, it is true, else not, as in the example.

A.	34	9625
B.	19	1625
C.	24	6750
	58	8000
	G 2	

Four

## The Rule of Fellowship.

Four Merchants venture their money.

	l.	s.
A. } <span style="font-size: 2em; vertical-align: middle;">{</span> ventures	60	04
B. }	80	12
C. }	120	08
D. }	140	06

---

The total adventured 401 | 10 | Divisor.

---

Gained 144 pound, 7 shillings, 6 pence,  
the Dividend.

---

As in the former Example, divide the gain, 144 | 375 thirds; adding cyphers by 401 | 5 primes, the Quotient will give you 359 | 89 sixths, the gain of 1 pound: which multiplied by each severall adventure, will give you their severall gains.

Note, that when you are to multiply a Quotient, as in this Example, divide untill you have 6 fractions in the Quotient, in case you have a remainder to worke upon.

The



# The rule of Fellowship

88

Three Merchants buy a commodity  
which costeth 100 pounds. A. is to  
pay 35 pounds. B. is to pay 28  
pounds. C. is to pay 37 pounds. The  
Question is what each shall pay.

$$\begin{array}{r} 1 \text{ £. } 359589 \\ 60 \text{ 2 } 216472578 \end{array}$$

To worke this Question of the like, let  
downe in Division the parts  
of a pound: for 1000000  
primes: for 1000000  
primes: for 1000000

$$\begin{array}{r} 1 \text{ £. } 359589 \\ 80 \text{ 6 } 289828734 \end{array}$$

add the rest, makes 9 primes: 7  
conds the Division: by which divide 1000000  
adding 9 primes, the Quotient will give  
you 43 1000000 of a prime. The  
order of dividing whole numbers by fra-

$$\begin{array}{r} 1 \text{ £. } 359589 \\ 120 \text{ 4 } 432945156 \end{array}$$

ctions in the Division, see Fol. 70. 71.  
which Quotient multiply by 9 primes  
for 1000000 of a prime: and  
by a prime will give

$$\begin{array}{r} 1 \text{ £. } 359589 \\ 140 \text{ 7 } 504503357 \end{array}$$

For prooffe, add their severall gains, & add  
the remainder of the Division, 165, & if it  
bring forth the dividend or gain, it is true

	1.	...	.....
A.	21	6472578	
B.	28	9828734	
C.	43	2945156	
D.	50	4503357	
		rema. 165	
	144	3750000	Three

# The Rule of Fellowship.

Three Merchants buy a Commodity, which cost them 1250 pound : A. is to pay  $\frac{1}{3}$  : B.  $\frac{2}{3}$  : and C.  $\frac{1}{3}$  : The Question is what each man must pay.

To worke this Question or the like, set downe in Decimals the parts, as the parts of a pound: For  $\frac{1}{3}$ , 5 primes : for  $\frac{2}{3}$ , 2 primes, 5 seconds : for  $\frac{1}{3}$ , 2 primes: which added together, makes 9 primes, 5 seconds the Divisor : by which divide 1250 adding Cyphers, the Quotient will give you 2473168421 fiftis of a prime. The order of dividing whole numbers by fractions in the Divisor, see Fol. 70, 71. which Quotient multiplied by 5 primes for  $\frac{1}{3}$ ; by 2 primes, 5 seconds, for  $\frac{2}{3}$ ; and by 2 primes for  $\frac{1}{3}$ ; the product will give you each severall payment, as in the worke you may behold.

11
--

# The rule of Fellowship:

288

## The Worke.

$$\begin{array}{r} 12 \\ 2473 \overline{) 68421} \end{array}$$

$$\begin{array}{r} 12 \\ 1236 \overline{) 842105} \end{array}$$

$$\begin{array}{r} 12 \\ 618 \overline{) 4210525} \end{array}$$

$$\begin{array}{r} 12 \\ 494 \overline{) 736842} \end{array}$$

The prooffe is the same as in the former examples.

	1.	.....
A.	1236	842105
B.	618	4210525
C.	494	736842
		remain. 5

$$23501. | 0000000$$

G 4

A

*Fellowship in Losse:*

A Debtor dyeth, and oweth unto three Merchants 2000 pound : to A. 900 pound: to B. 700 pound : to C. 400 pound : Now his whole estate comes but to 800 pound, which money must be proportionably divided amongst the Creditors : the question is, what each man must have. Adde cyphers unto 800 pound, and divide by 2000, as in the former examples, and the Quotient will give you 4 primes, the gaine of 1 pound : which multiplied by each severall debt, the product will give you their severall shares, as in the severall figures you may behold:

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# Fellowship in Loss.

89

## The Worke.

$$\begin{array}{r} 1 \text{ L. } 4 \\ \times 4 \\ \hline 900 \text{ L. } 360 \text{ 0} \end{array}$$

$$\begin{array}{r} 1 \text{ L. } 4 \\ \times 4 \\ \hline 700 \text{ L. } 280 \text{ 0} \end{array}$$

$$\begin{array}{r} 1 \text{ L. } 4 \\ \times 4 \\ \hline 400 \text{ L. } 160 \text{ 0} \end{array}$$

The prooffe as the former.

	L.	l.
A.	360	0
B.	280	0
C.	160	0

800 0

Three

## Fellowship in Time

Three Merchants, venture their money together : that is to say, A. ventures 100 pound, 12 months : B. 140 pound, 9 months : C. 180 pound, 5 months: which adventure hath gained 450 pound, 16 shillings : the Question is, what each man hath gained in the adventure ?

Multiply each money by his time, as, 100 by 12, makes 1200: and 140 by 9, makes 1260: and 180 by 5, makes 900: which added into one totall, makes 3360, the Divisor: by which divide the gaine 450/8 primes, adding cyphers, produceth in the Quotient 134166 sixths, the gaines of 1 pound; which multiplied by the products of each money, and time, gives you their severall gaines, as in the figures.

The

8000

C  
B  
A

1000  
2000  
3000

# Fellowship in Time:

91

The Worke.

I P.

1200

134166

160|999200

I P.

1260

134166

169|049160

I P.

900

134166

120|749400

The Prooffe, as the former.

E. . . . .

A.

160|999200

B.

196|049160

C.

120|749400

2240

450|800000

Gain

# Gaine and Losse.

Serges bought at 17 pound; I demand at what price I shall sell the same to gain 9 pound in the 100. Say by the rule of Three, If 100 pound gaine 9 pound: what 17 pound? which multiplied and divided, gives you 1 pound, 5 primes, 3 seconds; which added to 17 pound, makes 18 pound 10 shillings, 7 pence, 1 farthing, the Question demanded.

Bought at 23 pound, sold at 27 pound: I demand what profit in the 100 it was sold? Say if 23 bee 27: what 100? which multiplied and divided, adding cyphers, produceth in the Quotient 118|1818 fourths: out of which subtract 100, gives you 18 pound, 3 shillings, 7 pence, 1 farthings profit in the 100.

Bought



Bought at 35 pound, . . . 1. 81  
 sold at 32 pound, 10 35  
 shillings : I demand  
 what rate in the 100  
 the losse. Say by the  
 rule of Three, if 35  
 bee 32 1/5 primes  
 what 100 ? makes  
 92 85 42 fourths :  
 Note, that in losse you ever subtract the  
 Quotient out of 100, as in the example,  
 gives you 7 pound, 2 shillings, 11 pence  
 losse.

Bought at 6 pence . . .  
 the yard, sold at 7 02 5  
 pence 2 farthings : I  
 demand what profit  
 in the 100 ? Set  
 downe the Question  
 in Decimals as in the  
 figure, which multi-  
 plied and divided according to the former  
 rule, fol. 70, 71. then cut off 3 figures in  
 the Quotient on the left hand for 100, pro-  
 duceth 125 0 pounds, out of which sub-  
 tract 100 gives you 25 pound profit, as in  
 the example.

Bought

# *Gain and Losse.*

Bought at 18 pence the yard,  
 sold at 20 pence  
 I demand what  
 profit in the 100  
 which multi-  
 plied and divi-  
 ded, according  
 unto the former Question, gives you 11  
 pound, 2 pence, 2 farthings profit in the  
 100.

## *Questions of Interest.*

**VV**hat comes 60 pound, Interest  
 upon Interest, at 8 pound in the  
 100, to be paid at the end of 5 yeares?

To worke the same, find by the Rule of  
 Three, the V<sup>c</sup> of 60 pound, for 1 yeare,  
 and say, if 100 pound give 8 pound: what  
 60 pound? which multiplied, and divided,  
 makes 4/8 primes: place 4/8 primes un-  
 der 60 the Principall, and adde them into  
 one totall, gives you 64/8 primes the first  
 yeare, as in the example. Then to know  
 the second yeare, as before, say, if 100

gain

aine 8: what 64|8 primes? Answer,  
5|984 thirds; which added into one to-  
tal, makes 69|984 thirds, the second yeare;  
and so of the rest: which I omit, being the  
same as the former gives you, 88|1596-  
84608 ninths, the answer, as you may be-  
hold. In coyne, 88 pound, 3 shillings, 2  
pence, 1 farthing.

	P.	
Principall	60	
use.	4	8
1 Yeare	64	8
use.	5	184
2 Yeare	69	984
use	5	59872
3 Yeare	75	58272
use	6	0466176
4 Yeare	81	6393376
use	6	530347008
5 Yeare	88	159684608

And thus much may suffice for all Questi-  
ons in this nature, at any rate in the 100 to  
any

*Gain and Losse*

any number of yeares, as in the example.

$$\begin{array}{r|l} 110 & 46000 | 000000 \\ \hline & 418 | 181818 \end{array}$$

1 Year.

$$\begin{array}{r|l} 110 & 41818 | 181818 \\ \hline & 380 | 165289 \end{array}$$

2 Year.

$$\begin{array}{r|l} 110 & 38016 | 528900 \\ \hline & 345 | 6048 \end{array}$$

3 Year.

$$\begin{array}{r|l} 110 & 34560 | 480000 \\ \hline & 314 | 1861 \end{array}$$

4 Year.

A Merchant is indebted 460 pound to be paid at 4 yeares end, who is willing to pay it present, abating 10 pound in the 100 use upon use. Divide 460 pound by 110, adding 2 cyphers as whole numbers, and draw a prime line, adding more cyphers; then againe, divide every Quotient, taking in 2 of the fractions instead of Cyphers



phers, and againe divide by 110, and the last Quotient will give you 3141861 fourths, the Question demanded : in coyne 314 pound, 3 shillings, 8 pence, 3 farthings.

What is 60 pound Annuity worth for 5 yeares to be sold for present money at 8 pound in the 100, use upon use ? Adde to 100, the use required, whether 7, 8, 9, or 10 pound the 100, as in this is 8 pound use, makes 108 the first yeare ; then multiply 108 by 108, and the product gives you the second yeare : and so multiply each product by 108, untill you have the number of yeares during the Annuity, which is 5 yeares, and the last product will produce 14693280788, the Divisor, as in the example following you may observe: but the first 7 figures on the left hand will be sufficient ; that is to say, 1469328.

39927

2396261

Resp 239

H

108

# **Gain and Losse.**

108 1 years

108

---

864

1080

---

11664 2 years

108

---

933 12

116640

---

1259712 3 years

108

---

10077696

12597120

---

136048896 4 years

108

---

1088191168

1360488960

---

14693180768 5 years

---

Then to know the Dividend, say by the  
rule of Three, If 8 pound use, require 100  
pound

pound for his Principall : what will 60 pound use require for his principall ? which mul-

$$\begin{array}{r} 81. \quad \text{Z} \quad 1001. \\ 601. \quad \text{Z} \quad 7501. \end{array}$$

tiplied and divided, gives you 750 pound the Dividend ; unto which adde cyphers, and divide by 1469328, the Quotient will produce 5104374, which subtracted out of the Dividend,

rests 239|5626 fourths, the Question demanded.

$$\begin{array}{r} \text{Dividend } 750|0000 \\ \text{Quotient } 5104374 \\ \hline \end{array}$$

In coyne, 239 pound, 11 shil-

$$\begin{array}{r} \text{Rest } 239|5626 \\ \hline \end{array}$$

lings, 3 pence : which rule also serveth to worke any Question in this nature, at any rate in the 100, to any number of years, as in the example.

**H**

**Equation**

## Equation in Payments.

A Merchant hath owing him 884 pound, to be paid, 280 pound present, 304 pound at 5 months, 200 pound at 8 months, and 100 at 12 months: The Question is, at what time this money ought to bee paid at one payment? Multiply each money by his time, the ready money excepted, as 304 by 5; makes 1520: and 200 by 8, makes 1600: and 100 by 12 makes 1200: which added into one total, makes 4320 the Dividend: unto which adde Cyphers, and divide by 884, produceth 4|8868

fourths: that is, 4 months, and  $\frac{8868}{10000}$  parts of a month.

$$\begin{array}{r} 884 \overline{) 4320000} \\ \underline{4320000} \end{array} \quad \begin{array}{r} 4 \overline{) 8868} \\ \underline{8868} \end{array}$$

Now to know

what parts of a month, multiply 8868 fourths by 30, the nearest number one with another, gives you 26 dayes, and  $\frac{684}{1000}$  parts of a day; above halfe.

A Merchant hath owing him 652 pound 24 shillings to bee paid at severall payments, that is to say,  $\frac{1}{2}$  at 5 months,  $\frac{1}{4}$  at 7 months,  $\frac{1}{8}$  at 8 months, and  $\frac{1}{16}$  at 12 months:



# Equation in Payments.

moneths : at  
what time  
must it be  
paid at one  
payment? Set  
downe the  
parts in Deci-  
mals, as the  
parts of a  
pound ; for  $\frac{1}{3}$ ,

$\frac{1}{3}$	1	0
$\frac{1}{6}$	0	875
$\frac{1}{12}$	2	4
$\frac{1}{24}$	4	500
	<hr/>	
Months	8	775
	<hr/>	

2 primes ; which multiplied by 5 his time, makes 10. For  $\frac{1}{6}$  125 thirds, which multiplied by his time, makes 875 thirds: For  $\frac{1}{12}$ , 3 primes, which multiplied by 8 his time, makes 24 primes: For  $\frac{1}{24}$  375 thirds, multiplied by 12, makes 45 primes, which adde together, as in the Example, gives 8 months, and  $\frac{775}{1000}$  parts of a month: which multiplied as in the former example, makes 23 days, and  $\frac{11}{100}$  parts of a day.

*Alligation.*

**A**LLigation serveth to give an equal proportion of mixtures contrary.  
 Example.

White Wine at  
 18 pence the gal-  
 lon, is to be mix-  
 ed with Sacke at

$$30 \begin{array}{r|l} 36 : 12 & 93 \\ \hline 18 : 6 & 46 \end{array} \begin{array}{l} 333 \\ 666 \end{array}$$

36 pence the gallon : how many gallons must be taken of either sort, that 140 gallons may be at 30 pence the gallon? Take the difference of 30 and 36, rests 6, which place against 18 ; then take the difference of 30 and 18, rests 12, which place against 36 : so that as often as you take 12 of Sacke, you must take 6 of White-wine, to make the mixture. Adde the differences together, makes 18, and say, if 18 the differences be 140 : what 12 ? Again, if 18 be 140 : what 6 ? which multiplied and divided, produceth 93 gallons and  $\frac{1}{2}$  of Sacke ; and 46 gallons and  $\frac{1}{2}$  of White-Wine : as in the example.

# Alligation.

A Clothier  
is to mingle  
510 pound of  
colored wool,  
that is to say,  
at 52 shillings  
the Tod, at

	52:	12	180
38	42:	4	60
	34:	4	60
	26:	14	210
	<hr/>		
			510

42 shillings the Tod, at 34 shillings the  
Tod, at 26 shillings the Tod: how many  
Tod of each must I take to make that  
mixture worth 38 shillings the Tod? Take  
the difference of 38 and 26, rests 12,  
which place against 52. Again, the diffe-  
rence of 38 and 52, rests 14, which place  
against 26, and so of the other two prices.  
Looke how often you take 12 of the grea-  
rest price, you must take 4 of the two mid-  
dle prices, and 14 of the least price, and say,  
if 34 the differences be 510: what 14?  
Again, if 34 be 510: what 12? and so  
of the other differences, as in the example.

H 4

Barter

## Barter

**N**Ote that in Barter a match may be so made, if hee be not the warier, that when hee thinkes hee hath made a saving match, hee may lose both his commoditie, and money to boot.

---

### Example.

A Draper being asked the price of a yard of Dowlace, whose demand is 12 pence. The Chapman replyeth, that whereas his Dowlace is 12 pence a yard, the price of his yard shall bee two shillings, so that his Angell shall goe for 20 shillings: Vnto which, if the Draper assent, the Chapman requireth the Draper to cut him off 3 yards, and to change his money, and give him 14 shillings for his 20, who is then paid for his three yards of Dowlace: the Question is, who hath had the advantage in Bartering.

---

Two men Barter, one hath Indigo at 4 shillings the pound, first penny, but in Barter he will have 4 shillings, 9 pence: the other hath Kerfies, at 3 shillings, 6 pence



pence the yard, ready money: The Question is, at what price hee must rate his Kerfies in Barter, that hee may not bee overtaken? Set

downe the price

in Decimals, as

in the example,

and say, it

primes be

fourths: what 175 thirds? which multiplied and divided, produceth 2078 fourths: that is, 4 shillings, 1 penny, 3 farthings, the price that hee must rate his Kerfies.

$$\begin{array}{r} \dots \\ 2 \overline{) 2375} \\ \underline{2078} \\ 297 \end{array}$$

Two men will Barter, the one hath Wooll at 1 shilling, 10 pence the pound, ready

money, but in Barter hee will have 2 shillings, 3 pence: The other hath Holland, at 8 shillings, 6 pence the yard, present money, but in Barter he will have 4 shillings: the Question is, how many yards of Holland he shal have for 768 pound of Wooll.

First,

$$\begin{array}{r} \dots \\ 2 \overline{) 86400} \\ \underline{43200} \\ 43200 \end{array}$$

Barter.

First, know the price of 768 pound of wooll, at 2 shillings, 3 pence the pound, makes 86 pound, 4 primes, which divided by 2 primes, gives you 432 yards of Holland for his Wooll.

Two Merchants will Barter, the one hath Indigo at 28 pound present money, but in Barter he will have 29 pound 10 shillings.

The other hath Nutmegs at 21 pound 8 shillings present money, but in Barter hee will have

24 pound, 2 shillings: the Question is, who hath the advantage in Bartering, and at what rate in the 100? Say, if 28 gaine 1 pound, 5 primes: what 100? Answer,

£.	£.
28	1/5
£.	£. ....
100	5/35714
22/4	1/7
100	7/58928
	7/58928
	5/35714
	2/23214

5/35714

3|35714 fifths. Againe, if 22 pound, 4 primes, gain 1 pound, 7 primes; what 100? Answer, 7|58928 fifths, which if you subtract the one out of the other, gives you 2|23214 fifths, which the last man hath gained more than the first, as in the example.

---

Two Merchants .| . . . .| . . . .  
 barter, the one 8 15 12 | 5000 | 189 | 0625  
 hath Bever at 16 — | — — —  
 shillings the

pound; for which the other is to give him 875 yards of stuffe, at 3 shillings the yard, and 20 pound in money: the Question is, how many pounds of Bever hee is to have for his stuffe and money? First, finde the price what 875 yards cost, at 3 shillings the yard. Answer, 131 pound, 5 shillings: unto which adde 20 pound, makes 151 pound, 5 shillings, which divided by 8 primes, gives you 189|0625 fourths: that is, 189 pound of Bever and 1 halfe quarter of a pound, as in the example.

Position

**A** Shepherd being demanded how many sheepe he had in his fold: Answered, he did not well know, but of this I am certaine, that  $\frac{1}{2}$  and  $\frac{2}{3}$  and  $\frac{1}{4}$  and  $\frac{1}{5}$  added together, makes 768 sheepe; the Question is, how many sheepe hee had in his fold? I suppose 60 sheepe: So that  $\frac{1}{2}$  of 60 is 30, and  $\frac{2}{3}$  of 60 is 40, and  $\frac{1}{4}$  of 60 is 15, and  $\frac{1}{5}$  of 60 is 12, which added into one totall, makes 128: and say by the rule of Three, If

128 come of my  
supposition 60:

what 768?

which multipli-

ed and divided, gives you 360 sheepe in his fold, as in the example.

$$\begin{array}{r} 128 \text{ --- } 60 \\ 768 \text{ --- } 360 \end{array}$$

---

Three Merchants buy a Ship that cost them 777 pound, 12 shillings: A. is to pay a summe of money unknowne, and B. thrice as much as A, and C. foure times as much as B: the Question is, what each man must pay? I suppose, A. must pay  
1 pound,



1 pound, then B. must pay 3 pound, then  
 C. 12 pound, which is foure times as  
 much as B : which added together, makes  
 but 16 pound, and it should be 777 pound  
 12 shillings. Divide 777 pound, 6 pimes  
 by 16, gives you 48 6 pimes, the price  
 that A. must  
 pay. Then  
 B. must pay  
 thrice as  
 much as A.  
 and C. foure times as much B. which ad-  
 ded together, make 777 pound, 12 shil-  
 lings.

$$\begin{array}{r|l} 16 & 777 \text{ } 600 \text{ } 48 \text{ } 6 \end{array}$$

**The**

## *The Backer rule of Three:*

**T**O worke this Rule, you must multiply the first terme by the second; and divide the Product by the third, and the Quotient will give you the fourth terme demanded. Example.

I lent my friend

350 pound, 8

months, the Que-

stion is, how much

money ought he

to lend mee for 12 months, to equall my

curtesie. Say, if 8 months be 350 pound,

what 12 months? To worke the same,

multiply the first terme by the second, for

the Dividend: which divided by the third

terme, gives you 233 | 333 thirds: that is,

233 pound, 6 shillings, 8 pence, the fourth

terme demanded, as in the example.

$$\begin{array}{r} 8 \quad 350 \text{ l.} \\ 12 \quad \hline 233 \overline{) 333} \end{array}$$

If 30 men require

25 weekes to build

a Fort: how many

weeks will 20 men

build the like. Mul-

tiple and divide according to the former

rule, adding cyphers, the Quotient will

give

$$\begin{array}{r} 30 \quad 25 \\ 20 \quad \hline 37 \overline{) 5} \end{array}$$

# The Backer rule of Three.

III

give you 37 weekes, and 5 primes: that is, 5 weekes: as in the example.

## Reduction of Measure.

A ground containing 5 Acres, at 16 foot and  $\frac{1}{2}$  the perch: I demand how ma-

$$\begin{array}{r} 272 \overline{) 25} \quad \begin{array}{l} \nearrow 5 \\ \searrow 6 \end{array} \\ \underline{225} \quad \quad \quad 6 \overline{) 05} \end{array}$$

ny Acres the same ground, at 15 foot the perch? Square the perches severally, by multiplying them in themselves; as 16  $\frac{1}{2}$  primes makes 272  $\frac{1}{2}$  seconds; which multiplied by 5, gives you 1361  $\frac{1}{2}$  seconds the Dividend. Then multiply 15 in it selfe, makes 225 the Divisor: which againe multiplied and divided by the former rule, gives you 6 Acres, and 05 seconds, the parts of an Acre. Now to know what parts of an Acre, multiply 05 seconds by 160, the number of Perches in one Acre, will cast over the prime line, 8 perches, cutting off 2 fractions for seconds.

The

**T**His Rule serveth to worke any Question composed of 5 numbers, without the double workings of the Backer rule. Note that the first terme and the fourth agree in one Denomination : so the second terme and the fifth : and likewise the third and the sixth. Example.

---

If 6 hundred weight 50 miles carriage, cost 1 pound, 6 shillings, 6 pence : what 25 hundred weight 100 miles carriage ? To worke the same, multiply the three last numbers in themselves, as 100 by 25, makes 2500 : then againe multiply the product by 1225 thirds, the price, makes 3312500 primes, the Dividend : then multiply the two first numbers in themselves, as 50 by 6, makes 300, the Divisor ; by which divide, and the Quotient will give you 110416 fourths : in coyne, 11 pound, 10 pence, the sixth Question demanded : as in the Example.



# The Double rule of Three.

113

As before  
 multiply the 2 firsts in themselves  
 as 12 by 2 makes 24  
 multiply the 2 last in themselves  
 as 64 by 2 makes 128  
 divide 24 by 128 gives you  
 1/4 of a farthing  
 which is 3 pence  
 3 pence  
 300

The General  
 taking a rule to take the length at  
 the knee, the breadth at the breast, and  
 his depth in Hold which multiplied the  
 one in the other gives you his Tunnage  
 which

# *The Double rule of Three.*

If 12 yards of  
Cloth at 3 quar-  
ters broad, cost  
2 pound, 7 shil-  
lings: what 164

$$\begin{array}{r} 78 \\ 001 \end{array} \begin{array}{r} 36 \\ 820 \end{array} \begin{array}{r} 2 \overline{) 35} \\ 53 \overline{) 5277} \end{array}$$

yards, at 5 quarters broad? As before,  
multiply the 2 first numbers in themselves,  
as 12 by 3, makes 36 the Divisor: then  
multiply the 2 last numbers in themselves,  
as 164 by 5, makes 820; which againe  
multiplied by the price, 2/35 seconds,  
makes 1927/00, the Dividend: which di-  
vided by 36, the Quotient will give you  
53/5277 fourths: in coynē, 53 pound, 10  
shillings, 6 pence, 2 farthings, and  $\frac{192}{1000}$  parts  
of a farthing.

## *To know the burthen of a Ship.*

**T**He General received opinion in mea-  
suring a ship, is to take the length at  
the Keele, the breadth at the beame, and  
his depth in Hold: which multiplied the  
one in the other, then divide the last pro-  
duct by 100, gives you his Tunnage,  
which

## *To measure a Ship.*

which is the Kings allowance, But the Merchants giving no allowance for Ordnance, Masts, Sayles, Cables, and Anchors, which is all a Burden and no Tunnage, for which allowance they will divide by 110; but you must note that it is of such Ships, whose building from the Keele is squarewise. But for such Ships as are of late built for burthen, whose building from the Keele is bulgine, as a Cylinder Circular must needs be of more burthen; wherefore in that case it will bee requisite to divide by a lesse number then 100, as 95; which number by divers is thought reasonable. Example.

A Ship whose length at the Keele is 75 foot, his breadth at the beame 29 foot, the depth in Hold 13 foot; which numbers each multiplied in themselves, produceth 28175, which divided by 100, gives you 281 Tunne, and  $\frac{1}{4}$  of a Tunne.

## *To Gauge a Barrell.*

The order of measuring a Caske, is as followeth. Take the Diameter of the Bidge,

## To Gage a Barrell.

Bouge, and finde the Area of the Circle, then multiply the Area of the Circle in the length of the barrell. Againe, Take the Diameter at the head, and finde the Area of that Circle, multiply that by the length; then subtract the lesser Cylinder out of the greater, and  $\frac{1}{2}$  part of the difference taken from the greater Cylinder, rests the true Content of the Barrell in Inches, which divided by 231, gives you the Content in gallons of Wine-measure. Example.

X <sup>28</sup> A Barrell whose Diameter at the Bouge is 32 Inches, Square the Diameter, by multiplying it in it selfe, makes 1024, which multiplied by 11, makes 11264. This divided by 14, gives you 804  $\frac{57}{14}$  seconds, the Area of the Circle. This multiplied by 26, the length of the Barrell, produceth 20914  $\frac{52}{14}$  seconds, the square Inches in the same Cylinder. Secondly, take the Diameter at the head, which is 16, and according to the former rules find the Content of that Cylinder, which is 19121  $\frac{04}{14}$  seconds: then subtract this lesser Cylinder out of the greater, rests 9843  $\frac{48}{14}$

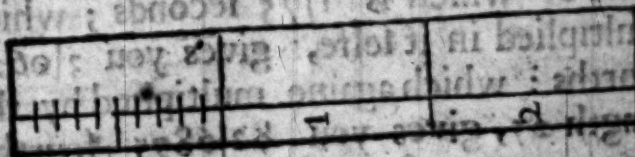


## To measure Timber.

11

9843|48 seconds, whose third part is  
3281|16, which againe taken from the  
greater Cylinder, rests 25683|36 seconds,  
the true content of the same Barrell in  
Inches; which divided by 231, gives you  
111|18 seconds in Wine Gallons.

## To measure Timber.



The order  
how to mea-  
sure Taper-  
growne Tim-  
ber: take the  
breadth at each  
end, and adde  
the together,  
take the halfe  
and square it,  
then multi-



ply the Square by the length, gives you the  
I 3 con-

## *To measure Timber.*

content of the said Timber: to measure the same, the best way is to divide a foot into 10 equal parts, which are called primes; and a prime into 10 equal parts, and that Division is called seconds. Example.

---

As in the said peece of Timber, A. B. 2 foot, and C. D. 1 foot and  $\frac{1}{2}$ , both which added together, makes  $3\frac{1}{2}$  primes; the halfe of which is  $1\frac{1}{4}$  seconds; which multiplied in it selfe, gives you  $3\frac{1}{16}$  fourths: which againe multiplied by the length 17, gives you  $82\frac{1}{16}$  fourths, the content of the said peece of Timber: that is, 82 foot, and  $\frac{1}{16}$  parts of a foot.

---

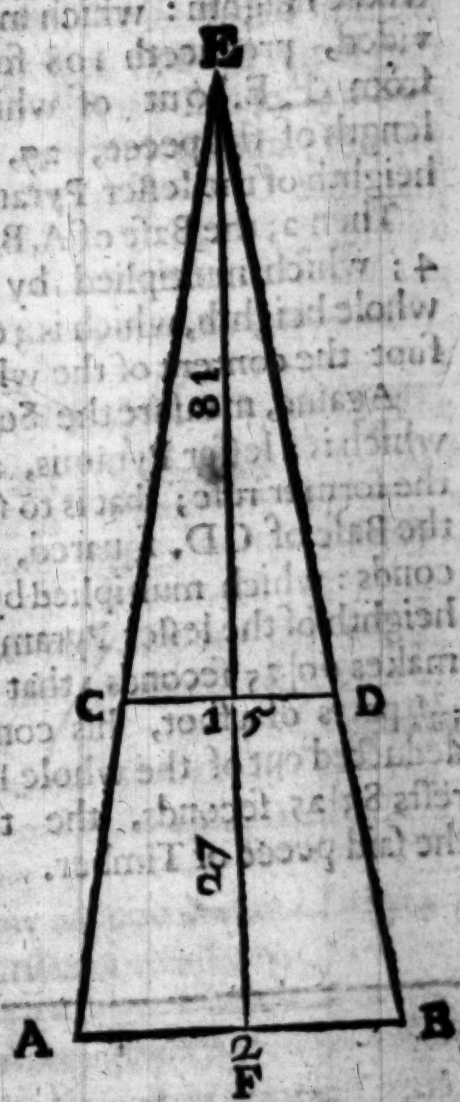
*Another way to measure the same peece of Timber exactly.*

Every peece of Timber thus growne will make a Pyramis, and may bee measured by the same Rules by which a Pyramis is measured by. Example.

As

# To measure Timber.

As in the  
 same peece,  
 A. B. C. D.  
 If the sides  
 A. C. and  
 B. D. be pro-  
 duced, they  
 will meet in  
 the point E.  
 and so in-  
 clude a Py-  
 ramis. First,  
 to finde the  
 whole heith  
 of the Pyra-  
 mis from F.  
 E. subtract  
 15 primes,  
 the toppe,  
 from 2, the  
 Base gives  
 you 5 primes  
 the Differ-  
 ence; then  
 say by the  
 Rule of Three, as the Difference 5 primes  
 is to the Base 2, so is the length 27, to the  
 whole



# To measure Timber.

whole heighth : which multiplied and divided, produceth 108 foot, the heighth from F. E. out of which subtract the length of the peece, 27, rests 81, the heighth of the lesser Pyramis.

Then 2, the Base of A. B. squared, makes 4; which multiplied by  $\frac{1}{3}$  of 108, the whole heighth, which is 36, gives you 144 foot the content of the whole Pyramis.

Againe, measure the Segment, C D E. which is a lesser Pyramis, according unto the former rule; that is to say, 1/5 primes, the Base of C D. squared, makes 2 2/5 seconds : which multiplied by  $\frac{1}{3}$  of 81, the heighth of the lesser Pyramis, which is 27, makes 60 7/5 seconds : that is, 60 foot, and  $\frac{7}{10}$  parts of a foot, his contents; which deducted out of the whole Pyramis 144, rests 83 2/5 seconds, the true content of the said peece of Timber.



THE



# THE SECOND PART OF ARITHMETICKE

Shewing the Order of extracting  
the Square and Cube Roots.

*Example.*

**A**ny Number multiplied in it selfe,  
the product produceth a Square  
Number : as 8 multiplied by 8,  
gives you 64 his Square, and his  
Root 8. Againe, multiply 12 by 12, gives  
you 144 his Square, his Root 12.

Now to know a Cube Number multi-  
ply a Square Number by his Root, gives you  
the Cube, as 144 a Square number multi-  
plied by 12 his Root, gives you 1728 the  
cube, his root 12.

$$\begin{array}{r}
 12 \\
 12 \\
 \hline
 24 \\
 144 \\
 \hline
 1728
 \end{array}$$

As if you were to extract the Root of

54756

2,7692150: 201123443

gir  
 is t  
 mu  
 5 :  
 Q  
 I :  
 for  
 —  
 ne  
 qu  
 4 t  
 ma  
 vic  
 ble  
 ma  
 for  
 m  
 fin  
 is  
 th  
 pl  
 re  
 fig  
 ew  
 w  
 3

1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81

Beginne with the first priekt number on the left hand, which is 5 : looke for the nearest Square to 5 in the multiplied Digits,

# The Square Root.

123

gits, or find it between two numbers: 9 is too much, 4 is too little, wherefore you must ever take it for the nearest Square to 5: place 4 under 5, and a his Root in the Quotient: draw a line, and subtract, rests 1: which place under 4, as in the example for the first worke.

Now to finde the next Root in the quotient, take down 4 to 1, the remainder makes 14 your Dividend: then double the Root, makes 4 the Divisor, and say, how many times can you find 4 in 14, which is 3 times: place 3 in the Quotient: then multiply 3 by 4, makes 12, which place under 14; draw a line and subtract, rests 2: unto which take downe the next figure 7, makes 27: under which you must ever place the Square of the last Root 3, whose Square is 9. Again, subtract 9 out of 27, rest 18. The second worke.

**Again,**

## The Square Root.

Againe, to finde the last Root, take downe 5 to 18, makes 185 the next Dividend: double 23, the figures in the last Quotient, makes 46 your Divisor, and say, how many times can you finde 46 in 185, which is 4 times: place 4 in the Quotient, which multiply by the Divisor, makes 184: which place under 185: draw a line, and subtract, rests 1: to which take downe 6, makes 16, and place the Square of 4, which is 16 under 16, and subtract, rests 0: for the last worke gives you 234 his Root, the Question demanded

Againe, 21687649 a Square number: Iooke as before for the neereft Square to 21: where I find

$$\begin{array}{r} 34756 \overline{) 234} \\ \underline{\phantom{000000}} \end{array}$$

$$\begin{array}{r} 4 \phantom{000000} \end{array}$$

$$\begin{array}{r} 2 \overline{) 14} \\ \underline{12} \end{array}$$

$$\begin{array}{r} 27 \\ 9 \end{array}$$

$$\begin{array}{r} 46 \overline{) 185} \\ \underline{184} \end{array}$$

$$\begin{array}{r} 16 \\ 16 \end{array}$$

$$\begin{array}{r} 21687649 \overline{) 21687649} \\ \underline{\phantom{0000000000}} \end{array}$$

$$\begin{array}{r} 16 \phantom{0000000000} \end{array}$$

$$\begin{array}{r} 5 \phantom{0000000000} \end{array}$$

p 3,6081002. Resp 4657 the quadrat root required for



25 too much, and 16 too little, which take and place 16 under 21: draw a line and subtract, rests 5, the first worke.

Take downe 6 to the remainder 5, makes 56 your Dividend: double the last Root 4, makes 8 your Divisor, and say, how many times can you finde 8 in 56, which is 7 times; but then you cannot subtract his Square 49 out of the remainder, and the next figure drawne downe: wherefore note that you must have a remainder with the figure drawne downe, out of which you may subtract the Square of the last figure found, as in this you cannot take 7 times, but 6: place 6 in the Quotient, which multiply by the Divisor, makes 48, and place it under 56: draw a line and subtract, rests 8: and take downe the next figure 8, makes 88: under which, place 36 the Square of the last figure

$$\begin{array}{r}
 21687649 \overline{)45} \\
 \underline{16} \\
 8 \overline{)56} \\
 \underline{48} \\
 88 \\
 \underline{36} \\
 52
 \end{array}$$

# The Square Root.

figure found, and againe subtract, rests 52 the second worke.

Take downe 7 to the remainder 52, makes 527 the Dividend: double the last root 46, makes 92 the Divisor, and say how many times can you finde 92 in 527, which is 5 times: place 5 in the Quotient, which multiply by the Divisor, makes 460, and place it under 527: draw a line and subtract, rests 67: take downe 6, to the remainder 67, makes 676, under which, place 35 the Square of the last root, and againe subtract, rests 651.

$$\begin{array}{r}
 21687649 \overline{)465} \\
 \underline{16} \\
 8 \overline{)56} \\
 \underline{48} \\
 88 \\
 \underline{36} \\
 92 \overline{)527} \\
 \underline{460} \\
 676 \\
 \underline{35} \\
 651
 \end{array}$$

Take downe 4 to the remainder 651, makes 6514 the Dividend: double 465, the last Root, makes 930 the Divisor, and say,

# The Square Root:

127

say, how many times  
can you finde 930 in  
6514, which is 7  
times: place 7 in  
the Quotient, which  
multiply by the Di-  
visor, makes 6510,  
and place it under  
6514: draw a line  
and subtract, rests 4,  
and take downe 9,  
makes 49; under  
which, place the  
Square of the last fi-  
gure found, 49 un-  
der 49, rests 0, and  
the worke ended  
gives you 4657 the  
Root, as in the ex-  
ample.

$$\begin{array}{r}
 21687649 \overline{) 4657} \\
 \underline{16} \\
 8 \overline{) 56} \\
 \underline{48} \\
 88 \\
 \underline{36} \\
 92 \overline{) 527} \\
 \underline{460} \\
 676 \\
 \underline{25} \\
 930 \overline{) 6514} \\
 \underline{6510} \\
 49 \\
 49
 \end{array}$$

For the prooffe, multiply the Root in it  
selfe, and adde the remainder if there be a-  
ny, and the Product will give you the  
Square.

Note,

# The Square Root.

Note, that when you have a number that is not a Square, as this, then adde paires of cyphers at pleasure, and draw a prime line, continuing your Division, and it will give you his Decimall parts in primes, seconds, and thirds, as in this example, gives you 68 the Root, and 2 parts.

$$\begin{array}{r} 46931006315 \\ \hline 36 \\ \hline 11109 \\ \hline 96 \\ \hline 133 \\ \hline 64 \\ \hline 136890 \\ \hline 680 \\ \hline 100 \\ \hline 25 \\ \hline 75 \end{array}$$

$$\begin{array}{r} 68.25 \\ \hline \end{array}$$

## Uses of the Square.

**T**O Square unequall sided Timber, as if a peece of Timber bee 14 Inches broad, and 9 Inches thicke: these 2 multiplied each into other, produceth 126, and the Square Root extracted, gives you

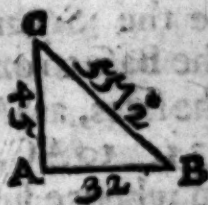


## Uses of the Square.

129

you 11|22 seconds, the true Square of the  
said peece of Timber.

Againe, in a right  
Angle, triangle the  
two sides, being gi-  
ven to find the Base,  
as AC, 45, and AB,  
32, both which sides  
squared severally,  
and added together, make 3049: the  
Square Root extracted, gives you 55|2  
primes, the true length of the Base requi-  
red.



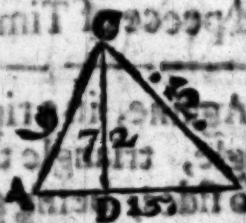
Againe, it serveth for speciall use in Sur-  
vey, to the exact measuring of an Oblique  
angle triangle: and the best way of casting  
up a plot, is to reduce it into Triangles, or  
into Trapezia, which consisteth of two  
Triangles: for the true measuring there-  
of there are two wayes: the first is, by ha-  
ving the perpendicular found, which mul-  
tplied by halfe the Base, produceth the  
Area: but before we proceed farther, it  
will be needfull to shew how the perpen-  
dicular may be first found. Example.

K

First

# Uses of the Square.

First, square the 3 sides severally, they will be 225, 144, and 81; then adde the Square of the Base to one of the sides, as A. B, 225, to AC, 81, the summe is 306; from whence subtract the Square of the other side 144, rests 162; whereof take halfe that, is 81: which divide by the Base 15, produceth 5  $\frac{1}{4}$  primes for the lesser Segment of the Base AD: the Square of which is 29  $\frac{1}{4}$  seconds, which being subtracted from 81, the Square of A C, leaves 51  $\frac{3}{4}$  seconds: the Square Root whereof is 7  $\frac{1}{4}$  primes, the length of the perpendicular CD: which multiplied in halfe the Base AB, which is 7  $\frac{1}{2}$  primes, gives you 54, the Area of the Triangle.



Secondly, thus adde all the three sides together, and from halfe the summe deduct each side severally, noting their differences: then in fold these differences each into other, and that product into the halfe summe, and out of that extract the

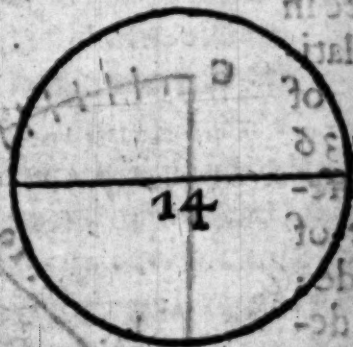
## Uses of the Square.

131

The Square Root, gives the Area. Example.

In the former Triangle the three sides are 15, 12, and 9, which added together, make 36, the halfe 18; from which take 15, rests 3; then 12 from 18, rests 6, then 9 from 18, rests 9: these three differences infolded each into other, make 162, which multiplied by 18 the halfe Summe, produceth 2916, whole Square Root is 54, the Area of the same Triangle as before.

Another use of the Square root is in finding the side of a Square equal to a circle. Example



As in this Circle whole Diameter is 14, whose Square is 196, this multiplied by 11, makes 2156: which divided by 14, gives 154: the Square root whereof

K 2

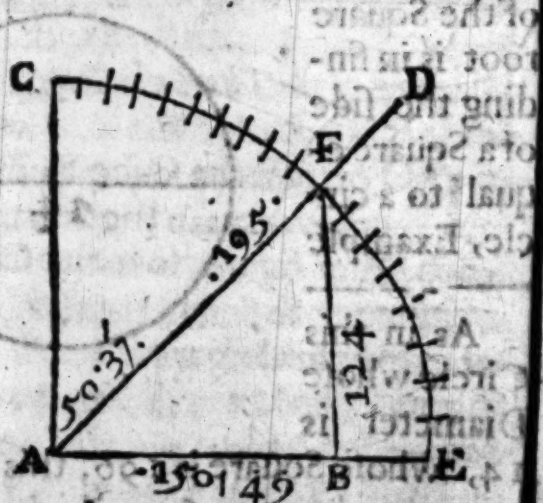
is

## Uses of the Square.

is  $1\frac{1}{4}$  primes, the side of a Square equall  
unto the Circle.

Againe, in Questions of Sayling: as if  
by Pyrats they have lost their Compasses,  
Plots, and Tables, to helpe themselves by  
the use of the Square Root. Example.

Suppose the place where they fell into  
the hands of the enemy were at A. AC,  
the Meridian: and suppose they saile be-  
tweene the South and the West, from A,  
in the parallel of 45 Degrees, 195 Leagues,  
and then by Observation find themselves  
to bee in  
the lati-  
tude of  
38. 36  
the diffe-  
rence of  
latitude:  
BF, 6 de-  
grees, 24  
m. which  
is 124  
leagues:  
then to find the difference of Longitude,



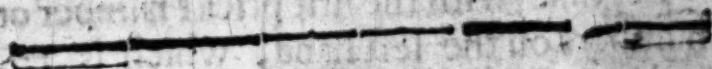
square



## *The Cube Root.*

132

square the distance A F, makes 38025 :  
and the square of B F, the difference of  
latitude, 15376 : then subtract the square  
of B F. from the square of A F, rests  
22649 the Square of A B, whose Root  
extracted, gives 150 $\frac{1}{2}$  leagues, the diffe-  
rence of Longitude. Then to finde the  
point of the Compasse, first divide the  
Quadrant C E, into 8 parts, and againe  
subdivide into 16, and into 32, wee shall  
finde the Rumb to fall about 4 points and  
 $\frac{1}{2}$  from the Meridian, as may bee seene in  
the Diagram,



## *The Cube Root.*

**T**O extract the Cube Root of any num-  
ber given: as in the Square you pricke  
each other figure, so in the Cube you must  
beginne at the right hand, and place pricks  
at every third figure.

K 3

Example.

## The Cube Root.

Example.

*4,2449200.175*  
*high 1,4149733.26*  
*side*  
*sook*

Root.	Square.	Cube.	
1	1	1	
2	4	8	
3	9	27	
4	16	64	17576 2
5	25	125	
6	36	216	8
7	49	343	9
8	64	512	
9	81	729	

Beginne with the first prickt number or numbers on the left hand, which is 17, and look for the nearest Cube to 17, in the Cube numbers, or find him between two numbers; 27 is too much, and 8 is too little, which you must ever take: place 8 under 17, draw a line and subtract, rests 9, as in the example. The first worke.

Take downe 5 to the remainder 9, makes 95, the Dividend: triple the former root 2, makes 6: then againe multiply the triple by the root, as 2 by 6, makes 12 the Divisor. Say, how many times can you find

# The Cube Root:

33

And 12 in 95, which is but 6 times: place 6 in the Quotient, which multiply by 12, makes 72: place 72 under 95.

$$\begin{array}{r} 17576 \overline{) 26} \\ 8 \\ \hline 12 \overline{) 9576} \end{array}$$

Againe, take down 7, and place him at the right hand of the Dividend, and multiply the Square of the last root 6, which is 36, by the former triple 6, makes 216: which place under 7, as in the example.

$$\begin{array}{r} 72 \\ 216 \\ \hline 9576 \end{array}$$

Againe, take downe 6, and place him at the end of the Dividend, and under that figure place the Cube of the last root 6, which is 216: then adde the numbers under the Dividend together, makes 9576: which subtract out of the Dividend, rests 0, and the worke ended, gives you 26, the Cube Root required.

K 4

Take

# The Cube Root.

Take the nearest Cube to 13, which is 8: place 8 under 13, and his Root 2 in the Quotient: draw a line and subtract, rests 5, the first worke.

$$\begin{array}{r} 13077534016 \overline{) 13} \\ \underline{8} \\ 5 \end{array}$$

Take downe 0 to the remainer 5, makes 50 the Dividend: triple the root 2, makes 6; which againe multiplied by 2, makes 12 the Divisor, and say, how many times can you finde 12 in 50, which may bee found 4 times; but then the subtracted

$$\begin{array}{r} 13077534016 \overline{) 13} \\ \underline{8} \\ 12 \overline{) 50:77} \\ \underline{36} \\ 14 \\ \underline{12} \\ 27 \\ \underline{24} \\ 3 \\ \underline{3} \\ 0 \end{array}$$

number wil be greater than the Dividend, with the figure drawne downe, that you cannot subtract, which at any time if it happen, it sheweth that you have taken the Root in the Quotient too much: wherefore take 3 times,

and



and place 3 in the Quotient ; which multiply by 12 the Divisor, makes 36 : place 36 under 50.

Take downe 7, and place him at the right hand of the Dividend, and multiply the Square of 3, which is 9, by the former triple 6, makes 54 : which place, as in the example, under 7.

Againe, take downe 7, and place him likewise at the end of the Dividend, and under that figure place the Cube of the last Root, which is 27 ; then adde the numbers under the Dividend together, makes 4167 : which subtract out of the Dividend 5077, rests 910, the second worke.

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Take downe 5 to the remainer 910, makes 9105, the Dividend ; then multiply 23, the last root, by his triples 69, makes 1587, the Divisor ; and say, how many times can you find the Divisor 1587 in 9105, which is 5 times : place 5 in the Quotient, which multiplied by the Divisor, makes 7935, which place under the Dividend.

Againe,

Again, take  
down 3, and  
place him at the  
end of the Divi-  
dend, then multi-  
ply the Square of  
the last root 5,  
which is 25, by  
the former tri-  
ples 69, makes  
1725 : which  
place as in the ex-  
ample, under 3.

Again, take  
down 4, & place  
him likewise at  
the end of the Di-  
vidend ; under  
which, place the  
Cube of the last  
root 5 ; that is,  
125 : then adde  
the numbers un-  
der the Dividend  
into one totall,

makes 810875, which subtract out of the  
Dividend, rests 99659, the third worke.

13077534016 2356

8

12 | 50 : 77

36

54

27

4167

sub.

1587 | 9105 : 34

7935

1725

125

810875

sub.

163675 | 996590 : 16

994050

25380

216

99659016

Take

By Division  
3, 3721753. Resp 2356  
The cube roots require

# The Cube Root.

139

Take downe 0 to the remainder 99639 makes 996390, the Dividend: then multiply 235 the last root, by 705 the triple, makes 165675 the Divisor; which severall workings being as the former, I omit, gives you 2356, the Cube root required as in the example.

The Proove is by multiplying the Root in it selfe: then multiply the Product by the same Root, which Product gives you the Cube number, adding the remainder, if there be any.

Note, that when you have a number that is not a Cube, but hath a remainder as in the Square, you adde payres of Cyphers; so in the Cube you adde 3 Cyphers, and draw a prime line: and so for every worke, adding still 3 cyphers, and continue your Division, the Quotient will give you his Decimall parts in primes, seconds, and thirds, &c, as in this example following, gives

Example  
2356  
m<sup>2</sup> B

## The Cube Root.

gives you 9 the  
Root, & 2 primes  
5 seconds; that is,  
2<sup>1</sup>/<sub>5</sub> parts.

$$\begin{array}{r} 792 \overline{) 000000} \quad 9 \overline{) 35} \\ \underline{720} \phantom{00} \\ 72 \phantom{00} \end{array}$$

$$\begin{array}{r} 243 \overline{) 630:00} \\ \underline{486} \phantom{00} \\ 144 \phantom{00} \end{array}$$

486

108

8

49688

The use of the  
Cube Root ser-  
veth to finde a  
proportion be-  
tweene like so-  
lids.

$$\begin{array}{r} 25392 \overline{) 133120:00} \\ \underline{126960} \phantom{00} \\ 6900 \phantom{00} \end{array}$$

126960

6900

125

12765125

Example.

546875

As if a Shot or Bullet of 9 pound weight,  
be 4 inches the Diameter: what Diameter  
a Bullet of 72 pound weight? First Cube,  
4, the Diameter of the Bullet given, makes  
64; then say by the rule of Proportion, if  
9 pound weight be 64: what 72? makes  
411, whose Cube root extracted, gives 8  
inches the Diameter of a Bullet whose  
weight is 72 pound.

F I N I S.



# Explain

Fol. 1 line 1, for times and times.  
 Fol. 2 line 1 for 9000, read 20.  
 Fol. 3 line 1 for 10000, read 10.  
 Fol. 4 line 1 for 1000, read 1000.  
 Fol. 5 line 1, the last, for 1000 gives, read 1000  
 out of the 1000, gives.  
 Fol. 6 line 1 for what 12, read what 12.

mended  
 of me  
 Ino  
 Phaspe  
 H

In the Divisions, make the lines, at the  
 end of the Divisor and Quotient meet at  
 the corners, which in some of the Divisi-  
 ons stand as a prime line.

2,709 2700 . 512

0,903 0900 . Resp 8tho cent

Required